National Park Service
Cultural Landscapes Inventory

2013

Jordan and Sargent Mountain Carriage Roads
Acadia National Park

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Inventory Summary

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Purpose and Goals of the CLI

The Cultural Landscapes Inventory (CLI), a comprehensive inventory of all cultural landscapes in the national park system, is one of the most ambitious initiatives of the National Park Service (NPS) Park Cultural Landscapes Program. The CLI is an evaluated inventory of all landscapes having historical significance that are listed on or eligible for listing on the National Register of Historic Places, or are otherwise managed as cultural resources through a public planning process and in which the NPS has or plans to acquire any legal interest. The CLI identifies and documents each landscape's location, size, physical development, condition, landscape characteristics, character-defining features, as well as other valuable information useful to park management. Cultural landscapes become approved CLIs when concurrence with the findings is obtained from the park superintendent and all required data fields are entered into a national database. In addition, for landscapes that are not currently listed on the National Register and/or do not have adequate documentation, concurrence is required from the State Historic Preservation Officer or the Keeper of the National Register.

The CLI, like the List of Classified Structures, assists the NPS in its efforts to fulfill the identification and management requirements associated with Section 110(a) of the National Historic Preservation Act, National Park Service Management Policies (2006), and Director's Order #28: Cultural Resource Management. Since launching the CLI nationwide, the NPS, in response to the Government Performance and Results Act (GPRA), is required to report information that respond to NPS strategic plan accomplishments. Two GPRA goals are associated with the CLI: bringing certified cultural landscapes into good condition (Goal 1a7) and increasing the number of CLI records that have complete, accurate, and reliable information (Goal 1b2B).

Scope of the CLI

The information contained within the CLI is gathered from existing secondary sources found in park libraries and archives and at NPS regional offices and centers, as well as through on-site reconnaissance of the existing landscape. The baseline information collected provides a comprehensive look at the historical development and significance of the landscape, placing it in context of the site's overall significance. Documentation and analysis of the existing landscape identifies character-defining characteristics and features, and allows for an evaluation of the landscape's overall integrity and an assessment of the landscape's overall condition. The CLI also provides an illustrative site plan that indicates major features within the inventory unit. Unlike cultural landscape reports, the CLI does not provide management recommendations or

treatment guidelines for the cultural landscape.

Inventory Unit Description:

The coastal islands and rugged shorelines of Maine serve as the setting for the historic carriage road system at Acadia National Park, located in Hancock County. Acadia was the first national park established east of the Mississippi River and today protects over 47,000 acres across Mount Desert Island, Schoodic Peninsula, and numerous smaller islands. Over 2 million visitors annually experience the park's diverse landscape of granite cliffs, evergreen forests, glacial lakes, salt marshes, cobblestone beaches, and rocky coastlines facing Frenchman Bay and the Atlantic Ocean. Three distinct yet integrated circulation systems allow visitors to explore these resources: 115 miles of historic hiking trails offer woodland walks and rugged climbs, 33 miles of historic motor roads stretch from mountain summits to the rocky coasts, and 57 miles of historic carriage roads track around lakes and along mountainsides.

Acadia's carriage roads were envisioned, designed, and funded by John D. Rockefeller, Jr. One hundred years ago, in 1913, Rockefeller constructed his first carriage road at his 15-acre estate in Seal Harbor to enjoy carriage driving and sightseeing. When the last carriage road bridge was completed in 1940, Rockefeller had skillfully built a network of rustic carriage roads that continues to provide motor-free access to some of the park's most scenic destinations on the eastern half of Mount Desert Island. Rustic wood signposts help guide users on foot, bicycle, or cross-country skis to roads that track alongside meadows and streams, encircle lakes and ponds, and curve around rocky mountainsides. Deciduous and evergreen forests line much of the system, and frequently open up to frame intimate vistas of the island's interior and panoramic views to the mainland and the surrounding islands, bays, and ocean. Most of the views and vistas were part of the system's overall design.

The carriage roads are one of the country's best examples of broken-stone roads, a type of road commonly used at the turn of the twentieth century. They are true roads, approximately 16 feet wide with gently sloping and curved alignments that utilize locally-quarried granite to blend the roads into the island's landscape. The carriage road profile consists of a 6-inch base of larger stones topped by 4 inches of smaller stones with a finished surface of 2 inches of gravel and a clay binding material. The carriage roads themselves were engineered and constructed to Rockefeller's exacting specifications and minute attention to detail. As with the park's other circulation systems, they were designed to fit in with the landscape by following the existing contours of the land and preserving trees along their routes. Vegetated roadside ditches of mosses, ferns, and other small plants help visually soften the road edges.

Acadia's carriage roads also include bridges, gatehouses, and engineering systems designed in a rustic style that seamlessly harmonizes with the surrounding landscape. All but one of the system's seventeen masonry arch bridges were constructed under the direction of Rockefeller, the last one built by the National Park Service. Depending on their length and height, the bridges are single, double, or triple-arched and faced with rough granite quarried on the island. The bridges feature low parapet walls that allow for unobstructed views of the scenery, and most include a stone engraved with the date of construction. Rockefeller also built twelve smaller wood bridges with granite abutments and timber railings in places where he felt masonry bridges would have been out of scale. Two gatehouse complexes dating from the early 1930s and now used as park housing are positioned along two of the main entry points to the system. Designed in the French Norman Revival style by architect Grosvenor

Atterbury, both feature a gatekeeper's house and carriage house joined by masonry fences and wood gates. Elements of the half-timbered and masonry buildings and their distinctive steeply hipped roofs can be seen elsewhere in the park's architecture. The complexes are set within lawns shaded by trees and shrubs designed by landscape architect Beatrix Farrand, whose plantings can also be seen around some of the bridges. Engineering features common to all types of roads—walls, embankments, waterways, and culvert headwalls—were constructed on the carriage roads with local stone so they would blend in with the surroundings, and today are weathered and sustain a variety of mosses and ferns. Perhaps the system's most unique feature, though, are the large coping stones alongside the road edges that serve as guardrails and are known as "Rockefeller's teeth."

The Jordan and Sargent Mountain Carriage Roads:
The scope of the Northeast Region CLI Program's work on the 57-mile historic carriage road system is concentrated on the 44 miles of carriage roads that lie within the park's boundaries. This includes 41 individual road sections varying in length from 0.1 to 3.6 miles, 16 of the 17 historic masonry bridges, and the 2 gatehouse complexes. The remaining sections of carriage roads and the Cobblestone Bridge are privately owned. These road sections are distinctly different in character because their road surfaces are much more vegetated than the surfaces of the federally-owned roads.

Due to the geographic extent of Acadia's carriage road system, and the need to efficiently document and map its features for uploading into the national CLI database, the system has been divided into four distinct landscape areas as described in a Historic American Engineering Record documentation project completed in the mid-1990s. The four areas were determined by a combination of factors, including location, natural features, topography, elevation, historical development, and similarities in road design. Thus, the four component CLI landscapes that comprise Acadia's historic carriage road system are: Eagle Lake and Witch Hole Pond Carriage Roads, Hadlock and Aunt Betty Pond Carriage Roads, Jordan and Sargent Mountain Carriage Roads, and the Bubble Pond and Day Mountain Carriage Roads (CLI Hierarchy Map).

The focus of this component CLI is the Jordan and Sargent Mountain Carriage Roads, comprised of 13 road sections (Drawings JM-SM). Nine road sections track around the middle and lower slopes of four connected mountains—Jordan, Sargent, Parkman, Cedar Swamp—and provide views and vistas of the mountainsides and across the island to the surrounding bays and ocean. Four other segments pass through the lower slopes formed by Little Harbor Brook in the Amphitheatre Valley and Jordan Stream that empties Jordan Pond. These roads are characterized by hilly and steep terrain with frequent rock cuts, especially on the east slopes of Jordan and Sargent Mountains, site of the unique rock slide area. The 13 road sections are associated with five different carriage road projects constructed between 1918 to 1932, and include 10 masonry bridges and three wood bridges.

HISTORICAL OVERVIEW

Frenchman Bay and the protected coves of Mount Desert Island were once home to Native Americans who hunted, gathered, and fished. In 1604, the island was named "Isles de Monts Desert" by French explorer Samuel de Champlain for its rocky and treeless summits, but significant European settlements

were not established on the island until the mid- to late eighteenth century. Early residents endured a difficult pioneer life of subsistence farming and fishing, and later began logging the dense forests and quarrying the abundant supply of granite. By the late nineteenth century, the local economy had begun to shift to accommodate the many tourists drawn by the picturesque paintings of the area by Thomas Cole and the works of other artists, writers, and scientists. New roads were built, and an intricate system of hiking trails was developed to access the island's scenic destinations. The island also became a resort community and summer pleasuring ground for the wealthy. Socially prominent families from Boston, New York, and Philadelphia built summer homes and Bar Harbor boasted dozens of hotels. (VHB 1994: 8)

Concerned for the future of the Mount Desert Island, a group of summer residents led by Harvard University President Charles W. Eliot formed the Hancock County Trustees for Public Reservations in 1901 to protect land from uncontrolled development. George B. Dorr was appointed as its director, and tirelessly acquired land for the Trustees through purchases and private donations. By 1916 Dorr had secured national monument status for these lands, and three years later the monument became a national park, the first to be established east of the Mississippi River. Dorr served as the park's first superintendent. (VHB 1994: 8)

Among the park's early benefactors was millionaire industrialist, philanthropist, and summer resident John D. Rockefeller, Jr., who hoped the fledgling park would one day become "a real gem of the first order among national parks." However, Rockefeller felt the arrival of the automobile on the island threatened this dream, and set out to build a separate system of carriage roads that would offer a refuge for hikers, horseback riders, and horse drawn carriages to commune with nature away from the noise and pollution of the increasing number of motor roads. While the earliest carriage roads were built on Rockefeller's own property, many of the later roads were built on public land. All of the carriage roads were funded by Rockefeller, intended for public use, and closed to motorized vehicles. (VHB 1994: 8)

John D. Rockefeller, Jr. was born in 1874 in Cleveland, Ohio. He was the fifth child and only son of John D. Rockefeller, Sr., founder of the Standard Oil Company, and destined to become one of the wealthiest men in the country. Wealth notwithstanding, young Rockefeller was taught that money was to be used wisely, and for the good of society. He developed an ethic for hard work from watching his father while also developing a passion for the natural landscape. Many of his early experiences in nature occurred at Forest Hill, the family's country estate outside of Cleveland, where he watched his father design and build bridle paths and carriage roads on which to indulge his passion for riding horses and driving carriages. Early in his life, horses became a recreational diversion for the younger Rockefeller as well, and even when other wealthy men were driving automobiles, he was driving a team of horses through downtown Manhattan. When the Rockefellers purchased Pocantico Hills, an estate on the Hudson River, John Jr. helped his father plan and build a system of carriage roads on the property that was open to the public for their use and enjoyment. These carriage roads were predecessors to the carriage roads on Mount Desert Island. (VHB 1994: 8-9)

At the age of 36, John D. Rockefeller, Jr., became convinced that the course of his life should be

devoted to disposing of wealth to advance the public good. It was 1910, the year he purchased The Eyrie in Seal Harbor on Mount Desert Island. Concerned that the island should be both wisely developed and carefully preserved, Rockefeller set about to ensure its protection, and to help the Trustees develop its potential as a national park. Because of his father, Rockefeller had a passion for road-building, and delighted in surveying and laying out carriage roads at The Eyrie, siting them to take advantage of the island's dramatic topography and picturesque scenery. Beginning in 1913, and for the next 27 years, Rockefeller planned and constructed an intricate system of carriage roads on the eastern side of Mount Desert Island. When completed in 1940, the project included 57 miles of gravel-surfaced roads and bridle paths, seventeen masonry bridges and two imposing gatehouses. Rockefeller employed local engineers Charles P. Simpson, Paul D. Simpson, and Walters G. Hill to oversee the construction. Noted architects William Welles Bosworth and Charles Stoughton designed the majority of the bridges, and architect Grosvenor Atterbury designed the gatehouses. Renowned landscape architect Beatrix Farrand worked with Rockefeller for nearly fifteen years to develop roadside plantings and scenic vistas. (VHB 1994: 9)

The carriage roads were state-of-the-art at the time of their construction. Roads were laid out to follow the contours of the land and each of the bridges was built from native stone quarried on the premises. The roads were to be wide enough for a carriage to pass comfortably, the views and vistas planned for the height of the rider as well as for the pedestrian. The bridges incorporated local materials and were sited to take advantage of scenic vistas and other natural features of the landscape, while the gatehouses designed in the French Norman Revival style were nestled into the woods along the roads. The design of the roads, bridges, and gatehouses reflected a deliberate concern for the natural environment, and every effort was made to blend manmade elements into the surrounding landscape. Taken together, these design qualities defined what came to be known as the Rustic Design style. (VHB 1994: 9)

The construction of the carriage road system occurred in several phases. The first roads were built around The Eyrie, but beginning in 1915 Rockefeller began extending the roads northward to the Jordan Pond House and between Jordan Pond and Brown Mountain. Some of these public carriage roads and bridle paths crossed into lands held by the Trustees, and included the Cobblestone Bridge, whose construction is unique among the carriage road bridges, and several smaller masonry bridges. In 1921, Rockefeller began planning for an even greater expansion of the carriage road system on other lands he owned on the island as well as park land, which was approved by Superintendent Dorr and the National Park Service. This development phase included a 7-mile loop around Jordan and Sargent mountains, a road from this loop to the Eagle Lake highway via the west side of Eagle Lake, and a road back to Jordan Pond via Bubble Pond. In the late 1920s and early 1930s, additional roads were also built to Aunt Betty Pond, along the east side of Eagle Lake, north to Witch Hole Pond and Paradise Hill, and through the Amphitheatre Valley. The last road segments from Barr Hill to Day Mountain and to that mountain's summit were completed by 1940, which is also when the seventeenth and last bridge was built.

With the planning, design, and construction of the carriage roads complete, Rockefeller turned his attention to implementing plans for the park's motor road system, which was completed in 1958, two

years before his death. However, he also established and funded an ongoing maintenance program for the carriage roads, bridges, and gatehouses, and funded reforestation efforts in the aftermath of the 1947 Bar Harbor fire that burned thousands of acres of forest and many of Beatrix Farrand's plantings. In the later years of his life Rockefeller transferred ownership of the carriage roads, bridges, and gatehouses to the National Park Service, and after his death, maintenance of the carriage roads became a responsibility of the park. In the decades that followed, however, inadequate funding for maintenance and competing management priorities lead to a decline in the condition of the roads, characterized by eroded surfaces and deteriorated bridges, clogged culverts and waterways, and overgrown views and vistas. In the late 1980s and early 1990s, various resource studies and park management plans recognized the historical importance of the carriage road system and recommended its rehabilitation, which began in 1994 through a partnership between the federal government and the non-profit Friends of Acadia. Work was completed in 1996, by which time $6 million had been leveraged in federal appropriations to reconstruct the carriage roads, and $4 million had been established in a road maintenance endowment.

Currently 43.5 miles of carriage roads are within park boundaries, the rest are on private lands but are open to public use. Motor vehicles are still prohibited, and the carriage roads are primarily used by hikers, bicyclers, joggers, horseback riders, and cross-country skiers. The carriage roads provide controlled visitor access to the interior of the park, and provide access for park maintenance personnel and park rangers in case of fire and other emergencies. Over 70 years after their construction, the roads, bridges, and gatehouses remain integral and much-admired resources in the park. The carriage road system is significant not only as a unique recreational resource, but also as an historical artifact of a bygone era. Its story is intertwined with the establishment of Acadia National Park, and its construction encompasses nearly one-third of the park's history to date. The carriage roads also represent an important period in the history and technology of road-building, and demonstrate the successful integration of man-made elements into the natural landscape. (VHB 1994: 10)

SIGNIFICANCE SUMMARY

Acadia National Park's carriage road system is locally significant under National Register of Historic Places Criterion A in the areas of conservation, recreation, and transportation; nationally significant under Criterion B for John D. Rockefeller, Jr. and his association with conservation, recreation, and other (philanthropy) at Acadia National Park and the National Park system; and nationally significant under Criterion C in the areas of architecture, engineering, and landscape architecture.

Under Criterion A, the carriage road system is illustrative of efforts to conserve Mount Desert Island's landscape while providing a pathway on which the public could experience the island's picturesque scenery. Under Criterion B, the carriage road system is perhaps the most important reflection of Rockefeller's direct involvement in the development of Acadia National Park and represents his earliest tangible involvement with road design projects and other philanthropic contributions throughout the National Park system. The gatehouses and bridges commissioned by Rockefeller and designed by well-known architects are among the most significant buildings and structures in the park and serve to underscore Rockefeller's design vision for park buildings and his close involvement with their execution,

from selecting the architect, funding the projects, and seeing them through construction. Under Criterion C, the carriage road system's attributes of sinuous curves, use of native stone, and artful presentation of scenic vistas resulted in one of the finest systems of broken-stone carriage roads in the country and also influenced the design of Acadia's nationally significant motor road system. The carriage road system is also reflective of the Rustic Design style as influenced by established design principles of the time and interpreted by architects Grosvenor Atterbury, William Bosworth, and Charles Stoughton, and landscape architect Beatrix Farrand. The distinctive design of Atterbury's gatehouse complexes, and particularly their hipped roofs, became the architectural style of many other buildings at Acadia. Bosworth and Stoughton's arched masonry bridges and Farrand's remnant plantings along roadways blend in seamlessly with the surrounding landscape, as do the system's stone walls, culverts, and waterways constructed by Rockefeller's engineers.

The period of significance for the federally-owned resources of the historic carriage road system is 1917 to 1940. The period begins with the completion of the Gardiner-Mitchell Hill-Jordan Stream Road in 1917, the first of four road projects proposed by Rockefeller in 1915 to create a system of carriage roads open to the public. Two of the road sections that comprise this carriage road are located within the park's boundaries. Over the next 27 years, Rockefeller expanded the system around Jordan, Sargent, and Day Mountains; to Bubble Pond, Aunt Betty Pond, and Eagle Lake; and around Witch Hole Pond and Paradise Hill north of Bar Harbor. The period ends in 1940 with the construction of the Triad-Day Mountain Bridge by the National Park Service, the last bridge associated with the 57-mile long system.

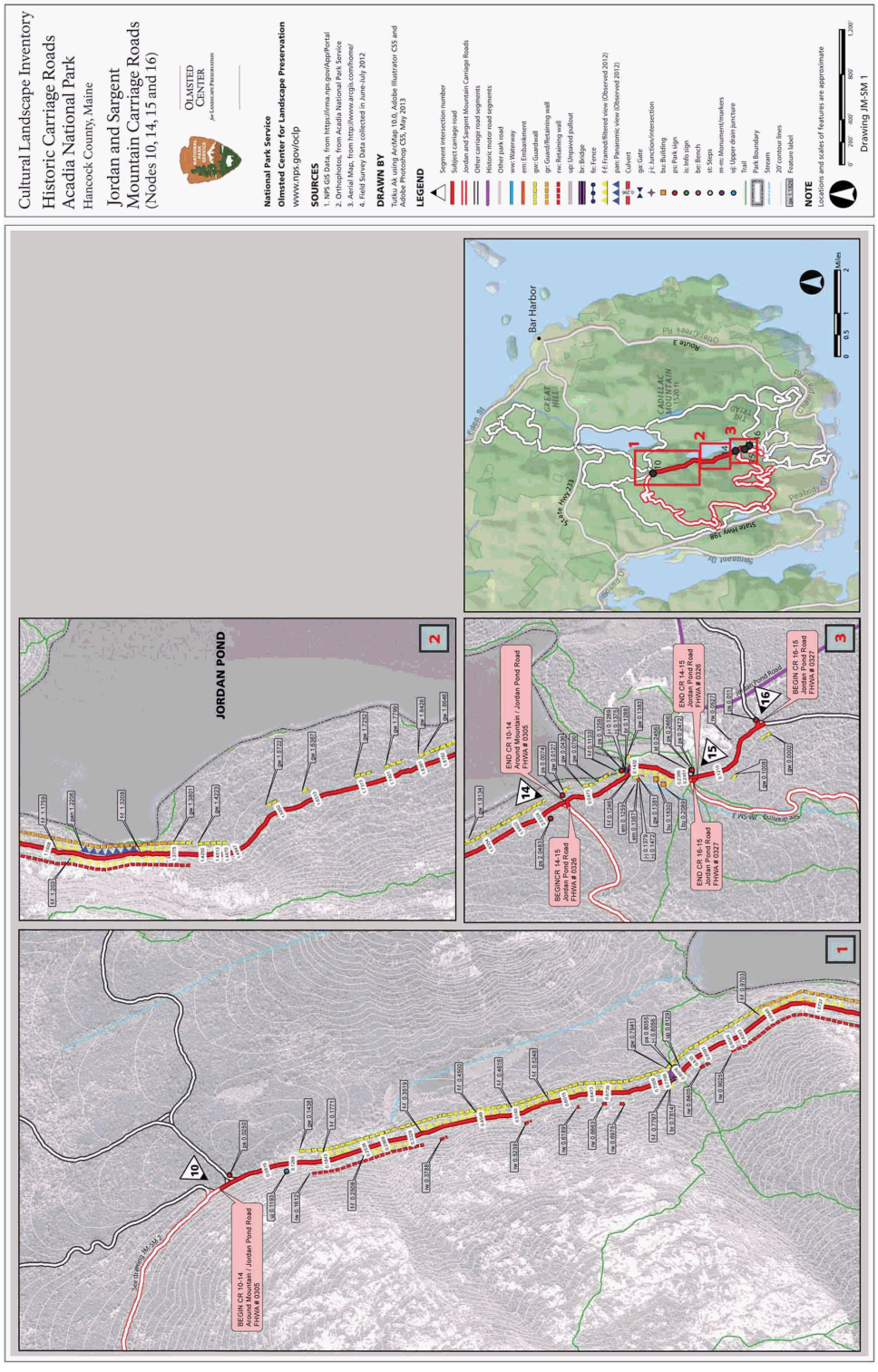
ANALYSIS AND EVALUATION SUMMARY AND CONDITION

The historic carriage road system and its bridges and gatehouses retain integrity of location, design, setting, materials, workmanship, feeling, and association to qualify for listing in the National Register. The carriage roads retain integrity of location and design through the original routes and road alignments. Alterations to the roads have been minimal and have not substantially diminished the Rustic Design expression or the vertical and horizontal alignments. The overall integrity of setting is intact as scenic views and vistas have been rehabilitated and continue to highlight the island's diverse natural features. Although many of Beatrix Farrand's plantings were lost in the 1947 fire, subsequent replanting efforts and natural growth have healed these scars. The integrity of materials and workmanship, including coping stone assemblages, stone bridges, and stone retaining walls, all signatures of Rockefeller's involvement in the design of the carriage road system, are still present, as are small-scale engineering features such as stone waterways and stone culverts. Documentation regarding Rockefeller's direct involvement in the design and construction of the carriage roads, bridges, and gatehouses is catalogued in the park's archives.

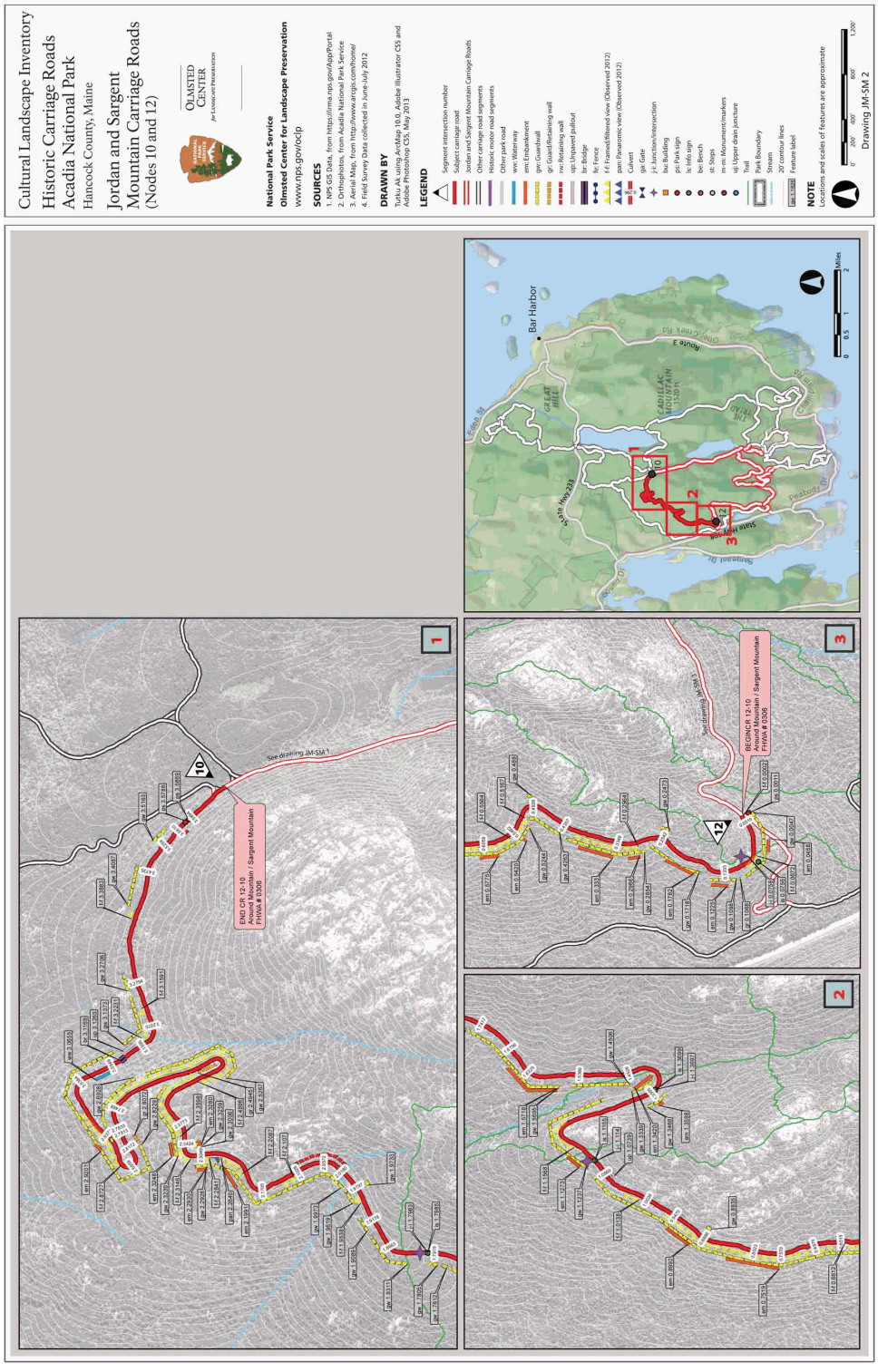
The overall condition of the historic carriage road system located within Acadia National Park at the time of this report's completion is evaluated as "good." There is no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition. The carriage roads and associated features have

been rehabilitated in the last 15-20 years. Periodic inspections are made on the roadways, engineering features, vistas, and roadside vegetation, and annual work plans address repairs to road surfaces, walls, coping stones, culverts, and waterways as needed.

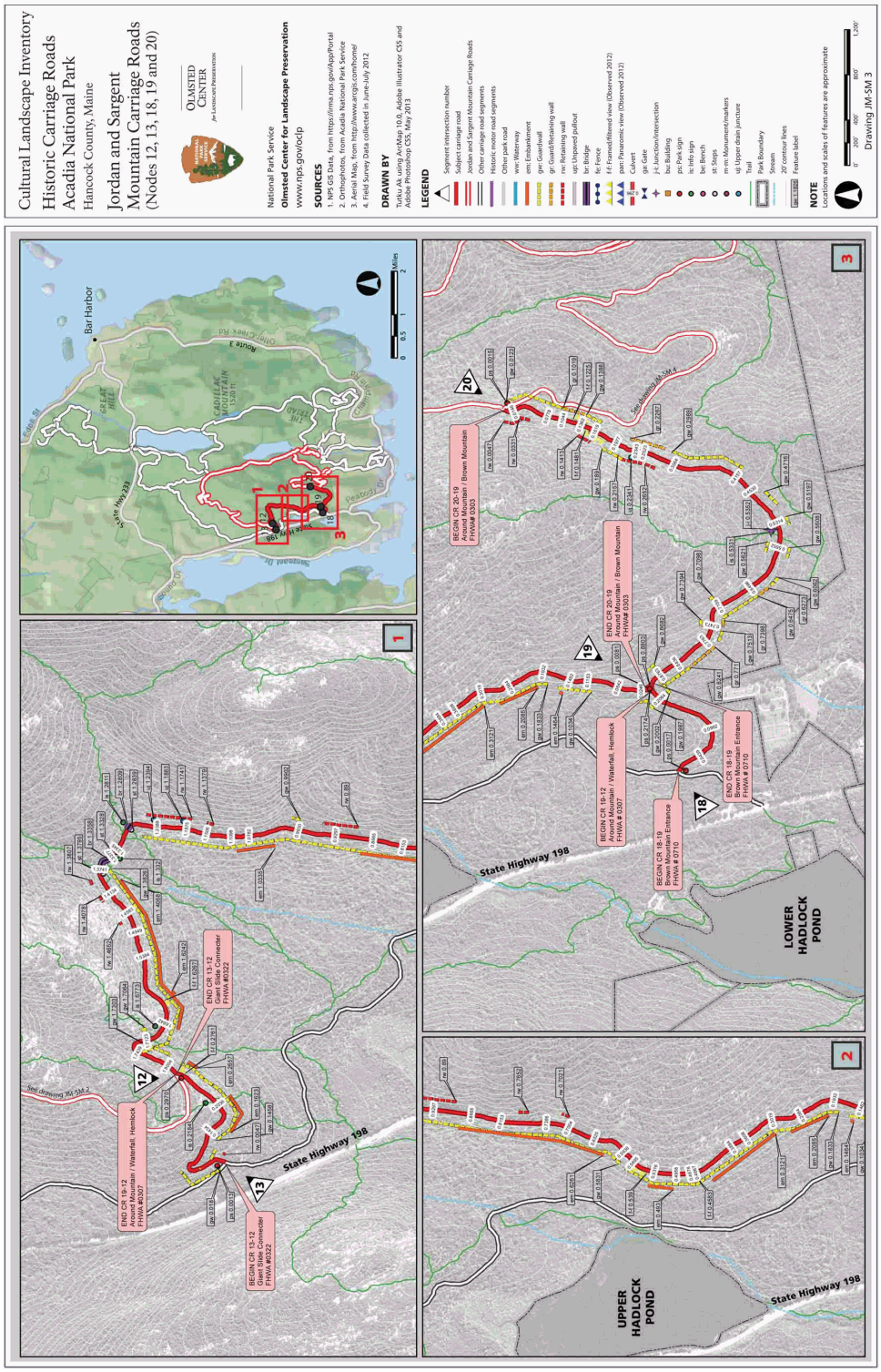
Site Plan



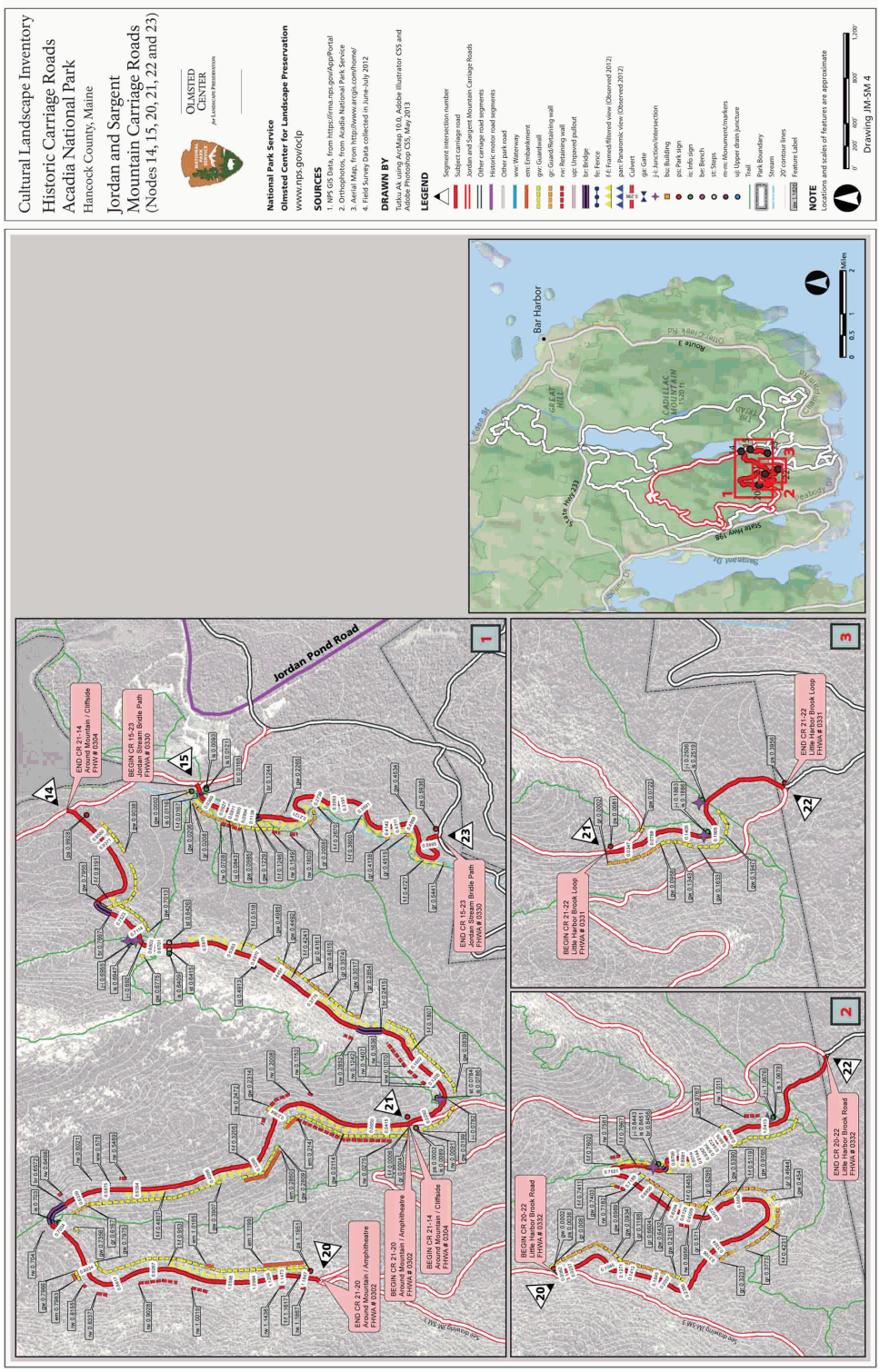
Site plan 1 of 4 for the Jordan and Sargent Mountain Carriage Roads. (State University of New York, College of Environmental Science and Forestry--hereafter SUNY-ESF--2013)



Site plan 2 of 4 for the Jordan and Sargent Mountain Carriage Roads. (SUNY-ESF, 2013)



Site plan 3 of 4 for the Jordan and Sargent Mountain Carriage Roads. (SUNY-ESF, 2013)



Site plan 4 of 4 for the Jordan and Sargent Mountain Carriage Roads. (SUNY-ESF, 2013)

Property Level and CLI Numbers

Inventory Unit Name: Jordan and Sargent Mountain Carriage Roads

CLI Identification Number: 975816

Parent Landscape: 650066

Park Information

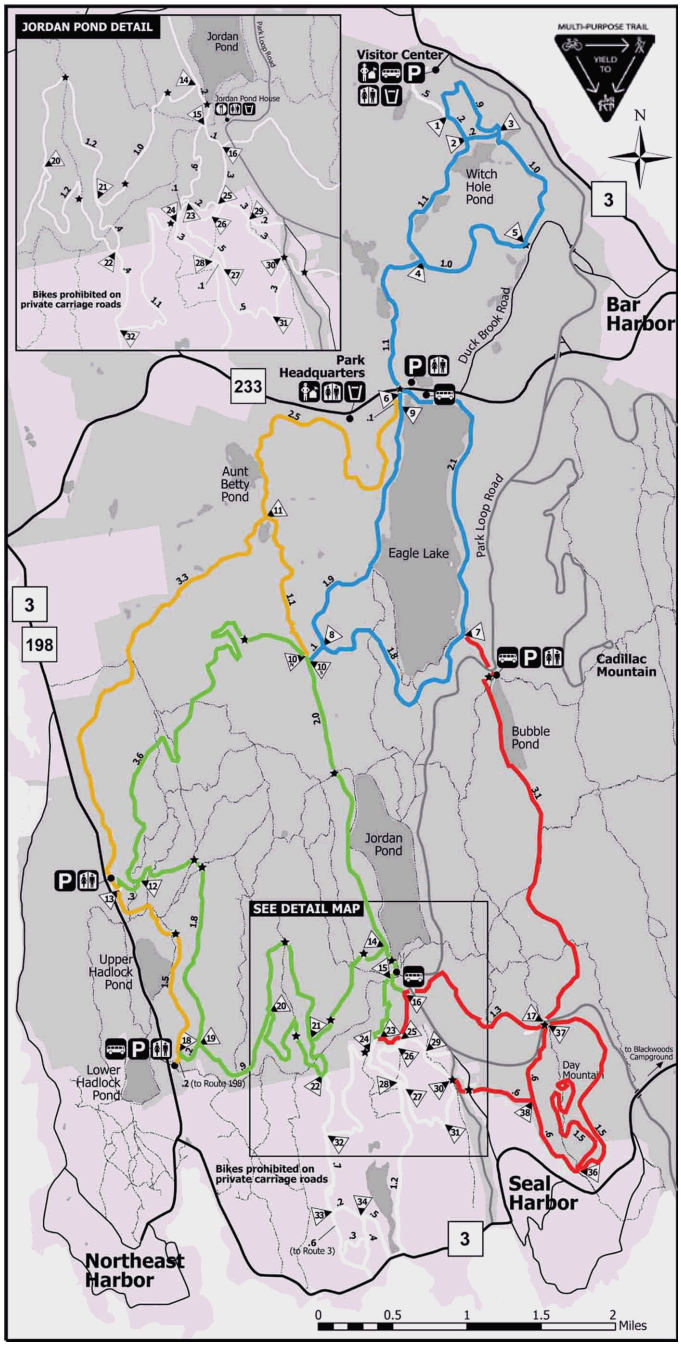
Park Name and Alpha Code: Acadia National Park -ACAD

Park Organization Code: 1700

Park Administrative Unit: Acadia National Park

CLI Hierarchy Description

The Historic Carriage Road System landscape includes four component landscapes comprised of varying numbers of individual road sections (see CLI Hierarchy Map). Acadia National Park currently includes 14 other landscapes (and one component landscape): Baker Island, Blackwoods Campground, Cadillac Mountain Summit, Carroll Homestead, Hiking Trail System, Historic Motor Road System, Isle au Haut, Jordan Pond House, Picnic Areas, Sand Beach, Schoodic Peninsula (Schoodic Peninsula Naval Base), Seawall Campground, Sieur de Monts Spring, and Thunder Hole.



The Eagle Lake and Witch Hole Pond Carriage Roads are blue, Hadlock and Aunt Bettys Pond Carriage Roads are orange, Jordan and Sargent Mountain Carriage Roads are green, and Bubble Pond and Day Mountain Carriage Roads are red. (Acadia NP website)

Concurrence Status

Inventory Status: Complete

Completion Status Explanatory Narrative:

In the summer of 2012, six undergraduate and graduate students from the State University of New York College of Environmental Science and Forestry (SUNY ESF) in Syracuse, New York, participated in a Field School offered through a partnership between the SUNY ESF Department of Landscape Architecture, the National Park Service, Olmsted Center for Landscape Preservation, and Acadia National Park. The main objective of the field school was to inventory and document landscape characteristics and features on the federally-owned portions of the carriage road system. The Field School provided hands-on experience in park management and cultural landscape preservation, and offered lectures and discussions on park management and historic preservation. The team also participated in field trips to areas beyond the park, including the Abby Aldrich Rockefeller Garden and Garland Farm designed by Beatrix Farrand, and a visit to the Asticou Azalea and Thuya Gardens. The students lodged at the College of the Atlantic in Bar Harbor.

The six student participants in the Field School were Charlotte Evanofski, Sara Bonacquist, Benjamin Boisclair, Margaret Johnson, Catherine Ponte, and the group's leader, Tutku Ak. Staff from Acadia National Park included Karen Anderson, Chris Barter, Bob Bechtold, Chris Buckzo, Rebecca Cole-Will, Alan Farnsworth, Jeff Grey, Robin Hoffman, Charlie Jacobi, Keith Johnston, John Kelly, Robyn King, David Manski, David Popelka, Sheridan Steele, Gary Stellpflug, and Anne Warner. Staff from the Olmsted Center and the National Park Service Northeast Regional Office included Margie Coffin Brown, Eliot Foulds, Elizabeth Igleheart, Jeff Killion, and Bob Page. Staff from SUNY ESF included John Auwaerter, Margaret Bryant, and George Curry. Other participants included Louis Moran (University of Maine), Gary Hilderbrand and Rob Krieg (ESF alumni), and Stephanie Clement and Jack Russell (Friends of Acadia).

After the field work was completed, Tutku Ak continued working on the project at SUNY ESF, synthesizing and organizing inventory data and using it to develop site plans for the carriage road system. The final CLIs, comprised of four component landscapes and one parent landscape, were completed in 2013 by Jeff Killion. The CLIs and the database will become an important tool for the park in its long term efforts to preserve and enhance the carriage road system. It will serve the park's facilities management system, cultural and natural resource managers, and interpretative programs.

Concurrence Status:

Park Superintendent Concurrence: Yes

Park Superintendent Date of Concurrence: 07/31/2013

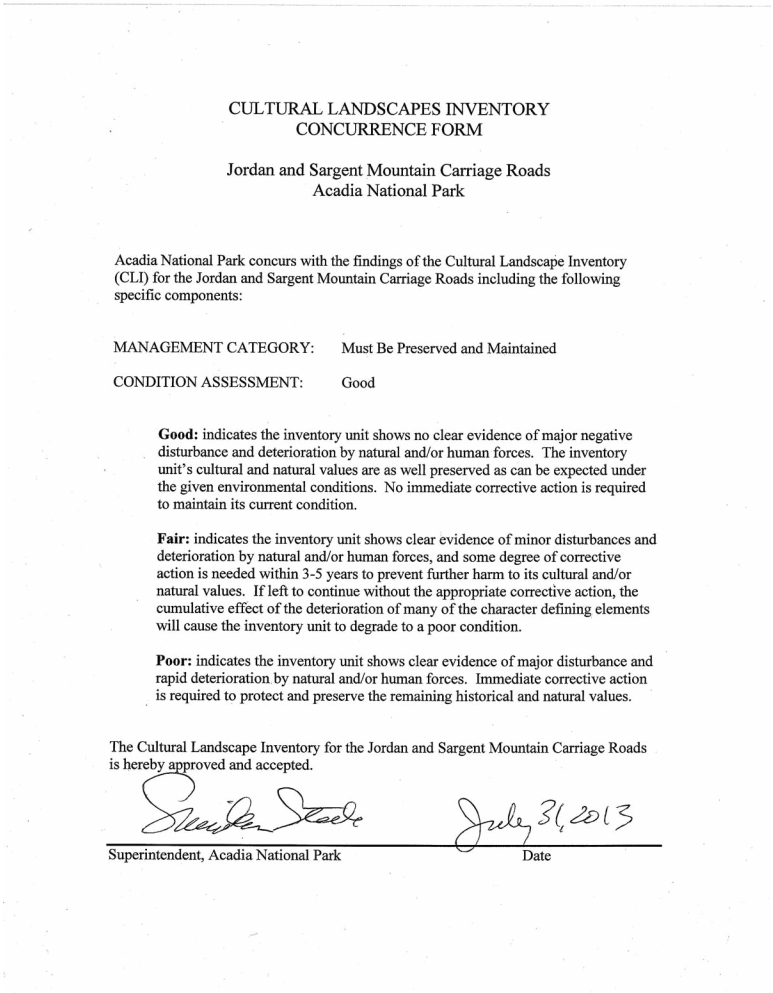
National Register Concurrence: Eligible -- SHPO Consensus Determination

Date of Concurrence Determination: 09/18/2013

National Register Concurrence Narrative:

The Maine State Historic Preservation Office (SHPO) concurred with the National Park Service's categorizations of the Historic Carriage Road System resources within the boundaries of Acadia National Park, including the areas, levels, and periods of significance, and lists of contributing, non-contributing, and undetermined.

Concurrence Graphic Information:



CULTURAL LANDSCAPES INVENTORY
CONCURRENCE FORM

Jordan and Sargent Mountain Carriage Roads
Acadia National Park

Acadia National Park concurs with the findings of the Cultural Landscape Inventory (CLI) for the Jordan and Sargent Mountain Carriage Roads including the following specific components:

MANAGEMENT CATEGORY: Must Be Preserved and Maintained

CONDITION ASSESSMENT: Good

Good: indicates the inventory unit shows no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The inventory unit's cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition.

Fair: indicates the inventory unit shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3-5 years to prevent further harm to its cultural and/or natural values. If left to continue without the appropriate corrective action, the cumulative effect of the deterioration of many of the character defining elements will cause the inventory unit to degrade to a poor condition.

Poor: indicates the inventory unit shows clear evidence of major disturbance and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical and natural values.

The Cultural Landscape Inventory for the Jordan and Sargent Mountain Carriage Roads is hereby approved and accepted.

Superintendent, Acadia National Park — Date: July 31, 2013

Park concurrence was received on July 31, 2013.

United States Department of the Interior

NATIONAL PARK SERVICE
Northeast Region
United States Custom House
200 Chestnut Street
Philadelphia, PA 19106

IN REPLY REFER TO:

1A2 (NER-RS)

JUL 22 2013

RECEIVED
AUG 20 2013
By 12813

Earle G. Shettleworth, Jr.
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, ME 04333

Dear Mr. Shettleworth:

Enclosed you will find four Cultural Landscapes Inventories (CLIs) documenting the entire length of the Historic Carriage Road System located within Acadia National Park (NP): Eagle Lake and Witch Hole Pond Carriage Roads, Hadlock and Aunt Betty Pond Carriage Roads, Jordan and Sargent Mountain Carriage Roads, and the Bubble Pond and Day Mountain Carriage Roads. We seek to reconfirm our agreement on previously evaluated resources and your concurrence on the status of previously unevaluated resources and features identified in these CLIs for listing in the National Register of Historic Places. The CLIs have been prepared by a team of historical landscape architects with the State University of New York – College of Environmental Science and Forestry, and the National Park Service (NPS) Olmsted Center for Landscape Preservation. The CLI program and the enclosed reports continue the National Park Service efforts to update our cultural resource inventories.

Through the CLI program, the NPS is currently in the midst of a nationwide effort to inventory its cultural landscapes. The CLI is conducted in accordance with Section 110 of the National Historic Preservation Act of 1966 (as amended). It is an inventory of baseline information for all historically significant cultural landscapes within the national park system, and it examines multiple landscape features that contribute to the significance of historic properties. The CLI process includes gathering information from existing secondary sources and conducting on-site reconnaissance of the existing landscape. The information collected provides a comprehensive look at the historical development and significance of the landscape, placing it in context of the property's overall significance. For landscapes found potentially eligible for the National Register of Historic Places, the evaluation describes their character-defining features and assesses the landscape's overall historical integrity. It also raises questions about the landscape that need further study.

It is important to note that the CLI reports are not intended as comprehensive inventory reports for any one property, although for some properties they provide fuller documentation than for others. For example, the reports do not include a full architectural description of structures, but

document structures as elements of the overall landscape, and similarly documents other characteristics such as vegetation, spatial organization, and views and vistas. The CLI is one component of the NPS inventory effort that also includes cultural resource inventories for historic structures, archeological sites, ethnographic resources, and museum objects. For example, the NPS List of Classified Structures inventory includes structural features of cultural landscapes, but the CLI takes a more encompassing approach to the properties, inventorying all above-ground features in each park in which the NPS has a legal or mandated interest.

Acadia National Park officially began with the proclamation of Sieur de Monts National Monument on July 8, 1916. The park was established as Lafayette National Park on February 29, 1919 and renamed Acadia National Park on January 19, 1929. The historic carriage road system was constructed from 1913 to 1940, but it was not until 1979 that its historic significance was documented in the National Register of Historic Places.

On November 14, 1979, documentation was accepted in the National Register for the historic carriage road system under the name "The Carriage Paths, Bridges, and Gatehouses, Acadia National Park." The documentation identified significance at the local level in the areas of transportation, engineering, and landscape architecture. The overall period of significance was listed as "1900-x," with specific dates of 1919-1931, which corresponds to the construction of some, but not all, of the bridges. The documentation specifically listed and described several resources associated with the carriage road system. They included the Jordan Pond Gatehouse and the Brown Mountain Gatehouse and their surrounding lawns and trees, and thirteen of the system's seventeen masonry-arch bridges. Of the four remaining bridges, the Cobblestone Bridge and Jordan Pond Road Bridge were not evaluated because at the time (1979) they were outside park boundaries, while the Triad-Day Mountain Bridge and Stanley Brook Bridge were not described because they were considered part of the park's historic motor road system. In addition, none of the smaller stone and steel bridges associated with the carriage road system, or specific road segments that comprise, were listed or described. The documentation explained that the carriage paths, bridges, and gatehouses were significant because of their historical association with the affluent summer colony which resided in the Mount Desert Island region in the early twentieth century, and that the bridges themselves were significant because they were unique examples of skillful craftsmanship and engineering. Scenic views and rustic intersection signposts were also briefly described in the documentation.

On March 26, 1993, your office agreed with the NPS that two of the bridges associated with the carriage roads and not evaluated in the 1979 documentation—the Triad-Day Mountain Bridge and Stanley Brook Bridge—were eligible for listing in the National Register. This determination was part of Section 106 compliance documentation prepared by the NPS titled, "Evaluation of Eligibility of the Historic Motor Road System of Acadia National Park for the National Register of Historic Places."

In 1994, your office and the Advisory Council on Historic Preservation concurred with the NPS that a proposed rehabilitation of the carriage road system would have no adverse effect on the qualities for which the carriage paths, bridges, and gatehouses were listed in the National

Register in 1979. This concurrence was referenced in an April 4, 1994 memorandum, "Record of Decision, Finding of No Significant Impact," from the Acting Superintendent of Acadia National Park to the Director of the NPS North Atlantic Region.

On July 1, 1996, your office concurred with the National Park Service on an itemization of contributing and noncontributing resources in Acadia National Park as part of an update to the List of Classified Structures (LCS). Regarding the historic carriage road system, the Jordan Pond Road Bridge that was not evaluated in the 1979 documentation was evaluated as a contributing resource due to its inclusion into the park as part of a 1990 boundary expansion. Twelve small stone and steel bridges associated with the system but previously unevaluated were identified as contributing: Jordan Stream Little Bridges (#s 1-3) built in 1918-1919, Eagle Lake Little Bridges (#s 1-3) built in 1929-1930, and Seven Sisters Little Bridges (#s 1-6) built in 1930-1931. In addition, 40 distinct road segments that comprise the carriage road system (identified by intersection numbers) were also evaluated as contributing resources. The 0.1-mile Section 6-9 was inadvertently omitted from the documentation, and Segment 23-24 was listed but is mostly located outside of park property. (Segments associated with intersections 22 through 34 are on private lands and were not described in the documentation). LCS descriptions for each segment generally described the roadbeds, and where applicable, the construction and materials of the coping stones, retaining walls, culvert pipes, and culvert headwalls.

On June 29, 2007, a Multiple Property Documentation Form (MPDF) titled, "Historic Resources of Acadia National Park" was accepted by the Keeper of the National Register. The MPDF identified historic contexts, property types, and registration requirements with which to evaluate park resources. The carriage roads were identified as part of the "Circulation Systems" property type under two historic contexts: "John D. Rockefeller, Jr. and the Development of the National Park System (1913-1958)," and "Rustic Design (1890-1958)" and its subthemes, "Picturesque Style (1890-1950)" and "Rustic Design of the National Park Service (1916-1958)." Significance was identified under National Register criteria A, B, and C in the areas of conservation, recreation, transportation, other (philanthropy), architecture, engineering, and landscape architecture. The documentation noted that the carriage roads were nationally significant because of the exceptional quality of design, craftsmanship, and construction; the high level of integrity of the system; and the importance of the carriage roads in relation to Rockefeller's contributions to the National Park System. Registration requirements for the carriage roads as outlined in the MPDF require that they retain sufficient integrity of location, design, setting, materials, workmanship, feeling, and association.

On June 5, 2013, the Keeper of the National Register accepted an amendment to the MPDF that added Buildings and Structures as an associated property type to the historic context, "John D. Rockefeller, Jr. and the Development of the National Park System (1913-1958)." Specific resources associated with the carriage roads included the Jordan Pond and Brown Mountain gatehouse complexes and all of masonry and wood carriage road bridges, which were part of Rockefeller's unified design vision for park buildings and structures. As such they were determined to be eligible for listing in the National Register at a national level of significance, and possibly at a national or local level under the historic context, "Rustic Design (1890-1958)."

Registration requirements for the gatehouse and bridges as outlined in the MPDF amendment require that they retain sufficient integrity and possess documentation supporting Rockefeller's direct involvement in their execution.

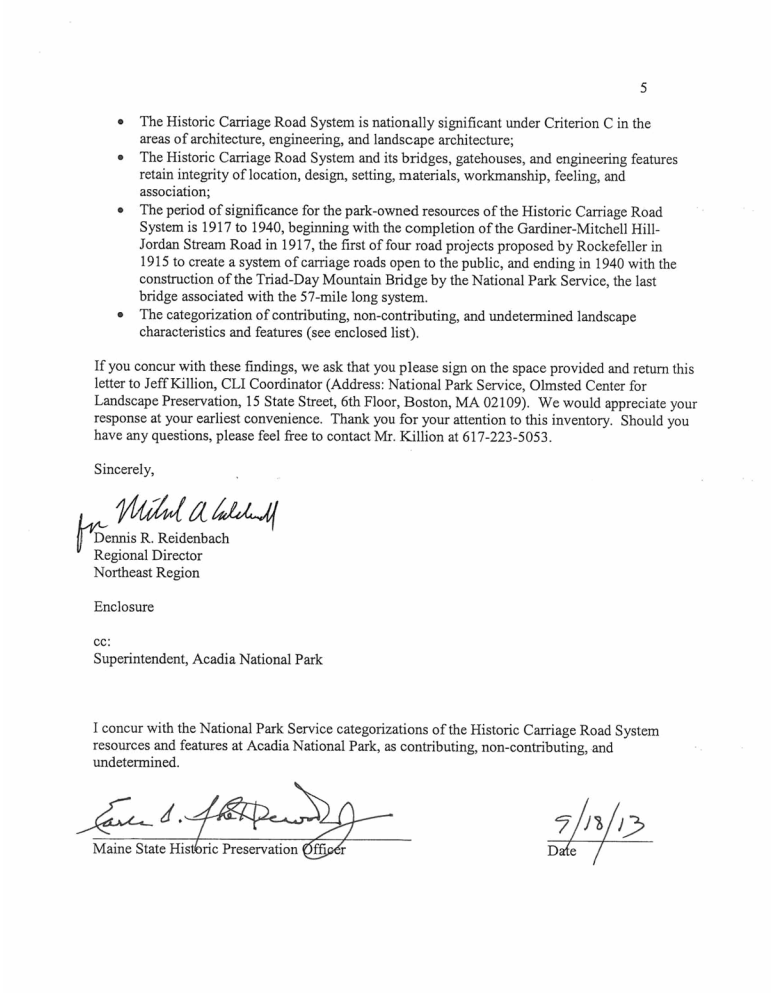
The four enclosed CLIs have determined that the park-owned portions of the Historic Carriage Road System, including its bridges, gatehouses, and engineering features, retain integrity to meet the registration requirements outlined in the MPDF and the MPDF amendment. The system retains integrity of location and design through the original routes and road alignments. Alterations to the roads have been minimal and have not substantially diminished the Rustic Design expression or the vertical and horizontal alignments. The overall integrity of setting is intact as scenic views and vistas have been restored and continue to highlight the island's diverse natural features. Although many naturalistic plantings designed by Beatrix Farrand were lost in the 1947 fire, subsequent replanting efforts and natural growth have healed these scars. The integrity of materials and workmanship, including coping stone assemblages, stone bridges, and stone retaining walls, all signatures of Rockefeller's involvement in the design of the carriage road system, are still present, as are small-scale engineering features such as stone waterways and stone culverts. Documentation regarding Rockefeller's direct involvement in the design and construction of the carriage roads, bridges, and gatehouses is catalogued in the park's archives.

The enclosed CLIs for the Historic Carriage Road System fully evaluate the cultural landscape, particularly the associated landscape characteristics and features, and finds that the park-owned portions of the system retains integrity to the areas of conservation, recreation, transportation, other (philanthropy), architecture, engineering, and landscape architecture. As noted previously, most of the property's major features compiled on the enclosed list have already been listed on the National Register or have been determined as eligible for listing on the National Register. The CLI identifies additional resources and features related to vegetation, circulation, buildings and structures, views and vistas, and small-scale features that contribute to the significance and historic character of the Historic Carriage Road System. Other features have been evaluated as noncontributing because they fall outside of the period of significance or as undetermined because future research is needed.

We call your particular attention to the Landscape Description, National Register Information and the Statement of Significance, and Analysis and Evaluation Summary in the enclosed CLI.

Based on the CLI, we seek to reconfirm our agreement on previously evaluated resources and your concurrence on the status of resources and features identified in this CLI:

- The Historic Carriage Road System is a "Circulation Systems" property type that meets the registration requirements of the park's Multiple Property Documentation Form;
- The Historic Carriage Road System is locally significant under Criterion A in the areas of conservation, recreation, and transportation;
- The Historic Carriage Road System is nationally significant under Criterion B for John D. Rockefeller, Jr. and his association with conservation, recreation, and other (philanthropy) at Acadia National Park and the National Park system;



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- The Historic Carriage Road System is nationally significant under Criterion C in the areas of architecture, engineering, and landscape architecture;
- The Historic Carriage Road System and its bridges, gatehouses, and engineering features retain integrity of location, design, setting, materials, workmanship, feeling, and association;
- The period of significance for the park-owned resources of the Historic Carriage Road System is 1917 to 1940, beginning with the completion of the Gardiner-Mitchell Hill-Jordan Stream Road in 1917, the first of four road projects proposed by Rockefeller in 1915 to create a system of carriage roads open to the public, and ending in 1940 with the construction of the Triad-Day Mountain Bridge by the National Park Service, the last bridge associated with the 57-mile long system.
- The categorization of contributing, non-contributing, and undetermined landscape characteristics and features (see enclosed list).

If you concur with these findings, we ask that you please sign on the space provided and return this letter to Jeff Killion, CLI Coordinator (Address: National Park Service, Olmsted Center for Landscape Preservation, 15 State Street, 6th Floor, Boston, MA 02109). We would appreciate your response at your earliest convenience. Thank you for your attention to this inventory. Should you have any questions, please feel free to contact Mr. Killion at 617-223-5053.

Sincerely,

for Dennis R. Reidenbach
Regional Director
Northeast Region

Enclosure

cc:
Superintendent, Acadia National Park

I concur with the National Park Service categorizations of the Historic Carriage Road System resources and features at Acadia National Park, as contributing, non-contributing, and undetermined.

Maine State Historic Preservation Officer

9/18/13
Date

SHPO concurrence was received on September 18, 2013.

Geographic Information & Location Map

Inventory Unit Boundary Description:

The boundary of the historic carriage road system is tailored to its linear nature. The length of the boundary simply reflects the total length of the 41 road sections that comprise the 44 miles of the system, within the park's boundaries. Based on research conducted for the CLIs for the historic carriage road system, the minimum boundary width for the entire system is 300 feet, or 150 feet on either side of the road centerline. This width includes the road cross-section, shoulders, guardwalls, walls, embankments, ditches, culverts, intersections, and vegetation associated with designed vistas. This width also considers how the boundary of the road is perceived in the landscape. Along certain carriage road sections the physical boundaries may narrow, such as between a rock cliff on the cut side and a steep embankment on the fill side, while in other segments the apparent boundaries of the road

broaden into the entire viewshed from the road. In other words, the engineered extents of the carriage road boundary actually fluctuate throughout the length of the system, but is reasonably approximated as 150 feet on either side of the centerline. This encompasses the significant characteristics and features of the historic carriage road system.

The Jordan and Sargent Mountain Carriage Roads component landscape is comprised of 13 road sections that total 13.5 miles. The road sections are: [CR 10s-14], [12-10n], [13-12], [14-15], [15-23], [16-15], [18-19], [19-12], [20-19], [20-22], [21-14], [21-22], and [21-20].

State and County:

State: ME

County: Hancock County

Size (Acres): 490.00

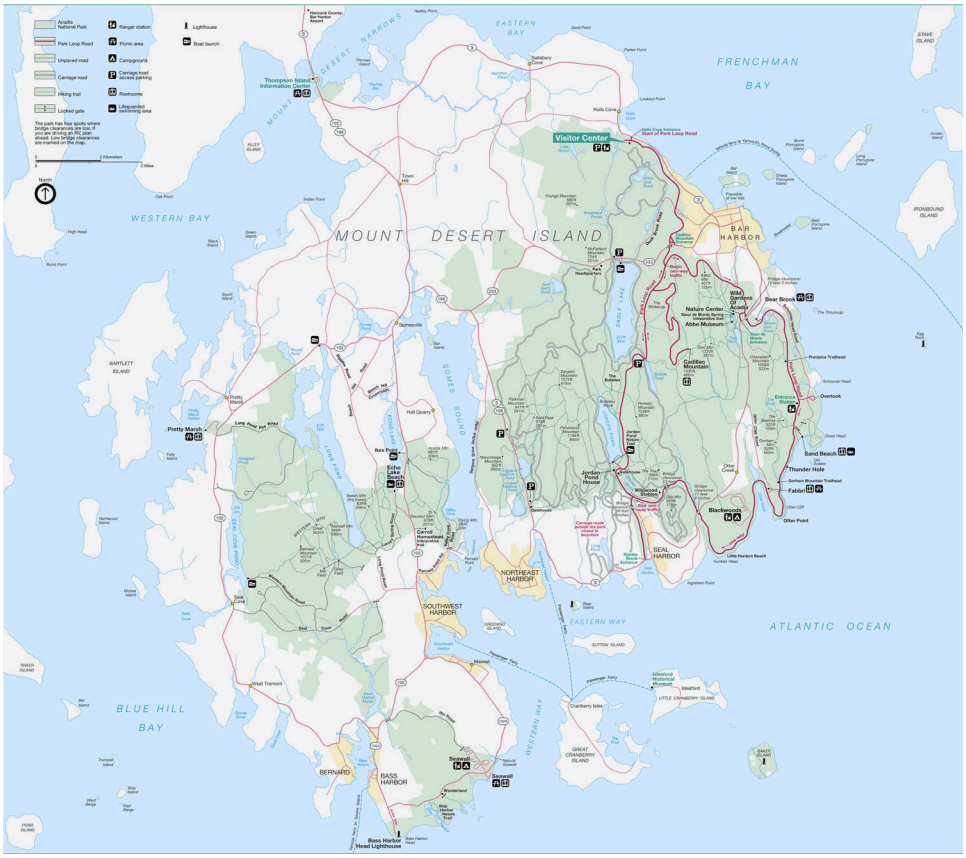
Boundary UTMS:

Boundary Source Narrative:	Node 10n
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 10s
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 12
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 13
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 14
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 15
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 16
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18

Boundary Source Narrative:	Node 18
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 19
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 20
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 21
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 22
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18
Boundary Source Narrative:	Node 23
Type of Point:	Point
Datum:	NAD 83
UTM Zone:	18

Location Map:

Map of central Maine and Acadia National Park. (Acadia NP files)



Map of Acadia National Park lands on Mount Desert Island. The carriage roads are indicated with double solid lines. (Acadia NP website)

Regional Context:

Type of Context: Cultural

Description:

Long before the development of the historic carriage road system, footpaths and roads marked the landscapes of Mount Desert Island. Native Americans likely developed portage and carry routes to access seasonal camps, and these routes were probably used and expanded by European settlers that slowly arrived after Samuel de Champlain explored the area in 1604. As towns and local economies developed, so too did footpaths and roads to improve trade and access the rich supply of natural resources. By the mid-nineteenth century, however, tourism was beginning emerge as the driving force in the area's economy, mostly because of artist Thomas Cole's landscape paintings and writings. Other painters and scientists came too, and by the 1860s and 1870s the island and peninsula attracted an annual summertime influx of visitors, called the "rusticators." This hastened the construction and improvement of roads, such as Ocean Drive in the 1890s, as well as many hiking trails and walking paths. By this time, the area was a favorite summertime destination of some of the country's wealthiest families, who built elaborate "cottages," and some of whom fought against the introduction of automobiles on the island to preserve what they felt was the island's tranquility.

Among the wealthy residents was John D. Rockefeller, Jr., who in 1913 began to build the first of many carriage roads on his property. In 1915 Rockefeller received approval to extend the carriage roads on to land controlled by the Hancock County Trustees for Public Reservations, which had been formed to acquire and protect land from uncontrolled development through purchases and private donations. The following year, Sieur de Monts National Monument was established, comprised of around 6,000 acres that were under the stewardship of the Trustees. In 1922, with the presence of cars inevitable, Rockefeller supported and funded the construction of the park's first motor road and in time began to embrace the idea of a comprehensive motor road system that would be separate and distinct from the carriage roads and hiking trails. Rockefeller's vision and donations resulted in the construction of over thirty miles of motor roads and over fifty miles of carriage roads that are still enjoyed by millions of park visitors each year.

Type of Context: Physiographic

Description:

The landscape of coastal Maine was shaped millions of years ago by complex events of geological upheaval, scouring, and inundation. Erosion gradually exposed the pink granite bedrock core of Mount Desert Island and the Schoodic Peninsula, while glaciers later rounded the peaks and scoured the valleys to form fresh-water lakes and ponds. The island today is described as being shaped like a lobster claw, bisected by Somes Sound, a narrow inlet of water surrounded by steep mountains. Cadillac Mountain is the park's highest point, and due to its height and longitude, its summit is one of first places in the country to see the sunrise.

Mount Desert Island's physiographic conditions guided the locations of footpaths likely created

by Native American inhabitants and shaped the networks of trails, motor roads, and carriage roads that lace Acadia National Park today. The historic carriage road system was purposely designed to lie lightly on the land and conform to local topographic characteristics as much as possible. The carriage roads were also planned to highlight the park's diverse natural scenery through views of the inland mountains, Frenchman Bay, the many islands including the Cranberries, the Porcupines, and Isle au Haut, and the vast Atlantic Ocean. The factors resulted in variations in the design and character of the carriage roads; for example, roads around Jordan Mountain and Sargent Mountain are generally different in character (longer panoramic views, more engineered features) than the roads around Eagle Lake and Witch Hole Pond (shorter framed views, fewer engineered features).

Type of Context: Political

Description:

A majority of Acadia National Park is located in mid-coastal Maine on Mount Desert Island, approximately 45 miles southeast of Bangor. The park protects more than 47,000 acres on the island, as well as the Schoodic Peninsula and numerous smaller islands: 35,332 acres are owned by the federal government, and 12,416 acres of privately owned lands are under conservation easements managed by the National Park Service. The island lies just off the mainland, and is accessible by means of a bridge at the town of Trenton. The east side of the island is heavily visited—the town of Bar Harbor is located here—and is where the historic carriage road and motor road systems are located.

Management Information

General Management Information

Management Category: Must be Preserved and Maintained

Management Category Date: 07/31/2013

Management Category Explanatory Narrative:

Acadia National Park's historic carriage road system meets the "Must Be Preserved and Maintained" management category because the carriage roads, bridges, and gatehouses are nationally significant for their association with John D. Rockefeller, Jr. and his role in the development of the National Park system. Rockefeller designed and constructed the carriage roads, and provided design review, approval, and consultations for its bridges and gatehouses. The findings of this CLI conclude that the historic carriage roads are an integrated system that together with their associated characteristics and features are nationally significant under National Register Criterion B and Criterion C and locally significant under Criterion A.

NPS Legal Interest:

Type of Interest: Fee Simple

Public Access:

Type of Access: Other Restrictions

Explanatory Narrative:

The carriage roads are open all year except for a 1-2 week period in the spring when frost is thawing and use could damage the structure of the roads. The roads are closed to motor vehicle use, and bicycles are prohibited on privately-owned carriage roads. Horses are prohibited on the Witch Hole Pond and Paradise Hill Loops and the Eagle Lake Loop, except between intersections 7 and 8. Snowmobiles may travel on the carriage road on the east side of Eagle Lake.

Several parking lots provide access to the carriage road system, and are generally inconspicuous from the roads due to topography or the presence of vegetation between the carriage roads and lots. There are two lots along Route 198, at the Brown Mountain Gatehouse (Node Rte.198) and Node 13. Two parking lots are found along the park's Jordan Pond/Eagle Lake Road, at the Jordan Pond House (Nodes 15 and 16) and at the north end of Bubble Pond (near Node 7). One parking lot is off of Route 233 at the north end of Eagle Lake (Node 6) and another off of Route 3 at the Hulls Cove visitor center (Node 1). The Island Explorer bus also stops at many of these locations.

Adjacent Lands Information

Do Adjacent Lands Contribute? Yes

Adjacent Lands Description:

Adjacent lands are defined as those lands outside of the current boundaries of the park that contribute to the significance of the historic carriage road system. On the southern end of Mount Desert Island just west of Seal Harbor are thirteen miles of carriage roads still owned by the Rockefeller family. Other lands outside of the boundaries are part of scenic views and vistas from the carriage roads. The carriage roads include views and vistas of the mainland to the west and north of the island and the many smaller islands that dot Frenchman Bay and the Atlantic Ocean to the east and south.

National Register Information

Existing National Register Status

National Register Landscape Documentation:

Entered Inadequately Documented

National Register Explanatory Narrative:

The park officially began with the proclamation of Sieur de Monts National Monument on July 8, 1916. The park was established as Lafayette National Park on February 29, 1919 and renamed Acadia National Park on January 19, 1929. The historic carriage road system was constructed from 1913 to 1940, but it was not until 1979 that its historic significance was documented in the National Register of Historic Places.

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According to research conducted for this CLI and the categories of National Register documentation

outlined in the "CLI Professional Procedures Guide," the major resources that contribute to the significance of the carriage road system have been listed in the National Register, or determined eligible for listing through consultations with the Maine SHPO. However, the areas and periods of significance, as well as engineering features associated with the carriage roads, are described in the MPDF but have not been adequately documented in the National Register or through previous SHPO consultations. Therefore, for purposes of the CLI, the historic carriage road system is considered "Entered-Inadequately Documented."

Existing NRIS Information:

Name in National Register:	Carriage Paths, Bridges and Gatehouses
NRIS Number:	79000131
Primary Certification Date:	11/14/1979
Other Certifications and Date:	Historic Resources of Acadia National Park MPDF - 6/29/2007

National Register Eligibility

National Register Concurrence:	Eligible -- SHPO Consensus Determination
Contributing/Individual:	Individual
National Register Classification:	District
Significance Level:	National
Significance Criteria:	A - Associated with events significant to broad patterns of our history
Significance Criteria:	B - Associated with lives of persons significant in our past
Significance Criteria:	C - Embodies distinctive construction, work of master, or high artistic values

Period of Significance:

Time Period:	CE 1917 - 1940
Historic Context Theme:	Creating Social Institutions and Movements
Subtheme:	Social and Humanitarian Movements
Facet:	General Philanthropy
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Creating Social Institutions and Movements
Subtheme:	Recreation
Facet:	General Recreation
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Creating Social Institutions and Movements
Subtheme:	Recreation
Facet:	Tourism
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Architecture
Facet:	Rustic Architecture
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Architecture
Facet:	Period Revivals (1870-1940)
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Landscape Architecture
Facet:	Protection Of Natural And Cultural Resources
Other Facet:	None

Time Period:	CE 1917 - 1940
Historic Context Theme:	Developing the American Economy
Subtheme:	Transportation by Land and Air
Facet:	Carriage Roads, Touring Roads and Parkways
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Transforming the Environment
Subtheme:	Conservation of Natural Resources
Facet:	Scenic Preservation
Other Facet:	None
Time Period:	CE 1917 - 1940
Historic Context Theme:	Transforming the Environment
Subtheme:	Conservation of Natural Resources
Facet:	Origin And Development Of The National Park Service
Other Facet:	None

Area of Significance:

Area of Significance Category:	Architecture
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None
Area of Significance Category:	Conservation
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None
Area of Significance Category:	Engineering
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None
Area of Significance Category:	Entertainment - Recreation
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None
Area of Significance Category:	Landscape Architecture
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None
Area of Significance Category:	Other
Area of Significance Category Explanatory Narrative:	Philanthropy

Area of Significance Subcategory:	None
Area of Significance Category:	Transportation
Area of Significance Category Explanatory Narrative:	n/a
Area of Significance Subcategory:	None

Statement of Significance:

Acadia National Park's carriage road system is locally significant under National Register of Historic Places Criterion A in the areas of conservation, recreation, and transportation; nationally significant under Criterion B for John D. Rockefeller, Jr. and his association with conservation, recreation, and other (philanthropy) at Acadia National Park and the National Park system; and nationally significant under Criterion C in the areas of architecture, engineering, and landscape architecture. Under Criterion A, the carriage road system is illustrative of efforts to conserve Mount Desert Island's landscape while providing a pathway on which the public could experience the island's picturesque scenery. Under Criterion B, the carriage road system is perhaps the most important reflection of Rockefeller's direct involvement in the development of Acadia National Park and represents his earliest tangible involvement with road design projects and other philanthropic contributions throughout the National Park system. The gatehouses and bridges commissioned by Rockefeller and designed by well-known architects are among the most significant buildings and structures in the park and serve to underscore Rockefeller's design vision for park buildings and his close involvement with their execution, from selecting the architect, funding the projects, and seeing them through construction. Under Criterion C, the carriage road system's attributes of sinuous curves, use of native stone, and artful presentation of scenic vistas resulted in one of the finest systems of broken-stone carriage roads in the country and also influenced the design of Acadia's nationally significant motor road system. The carriage road system is also reflective of the Rustic Design style as influenced by established design principles of the time and interpreted by architects Grosvenor Atterbury, William Bosworth, and Charles Stoughton, and landscape architect Beatrix Farrand. The distinctive design of Atterbury's gatehouse complexes, and particularly their hipped roofs, became the architectural style of many other buildings at Acadia. Bosworth and Stoughton's arched masonry bridges and Farrand's remnant plantings along roadways blend in seamlessly with the surrounding landscape, as do the system's stone walls, culverts, and waterways constructed by Rockefeller's engineers.

The period of significance for the federally-owned resources of the historic carriage road system is 1917 to 1940. The period begins with the completion of the Gardiner-Mitchell Hill-Jordan Stream Road in 1917, the first of four road projects proposed by Rockefeller in 1915 to create a system of carriage roads open to the public. Two of the road sections that comprise this carriage road are located within the park's boundaries. Over the next 27 years, Rockefeller expanded the system around Jordan, Sargent, and Day Mountains; to Bubble Pond, Aunt Betty Pond, and Eagle Lake; and around Witch Hole Pond and Paradise Hill north of Bar Harbor. The period ends in 1940 with the construction of the Triad-Day Mountain Bridge by the National Park Service, the last bridge associated with the 57-mile

long system.

The historic carriage road system and its bridges, gatehouses, and engineering features retain integrity of location, design, setting, materials, workmanship, feeling, and association to meet the registration requirements outlined in the park's Multiple Property Documentation Form (MPDF). The carriage roads retain integrity of location and design through the original routes and road alignments. Alterations to the roads have been minimal and have not substantially diminished the Rustic Design expression or the vertical and horizontal alignments. The overall integrity of setting is intact as scenic views and vistas have been restored and continue to highlight the island's diverse natural features. Although many of Beatrix Farrand's plantings were lost in the 1947 fire, subsequent replanting efforts and natural growth have healed these scars. The integrity of materials and workmanship, including coping stone assemblages, stone bridges, and stone retaining walls, all signatures of Rockefeller's involvement in the design of the carriage road system, are still present, as are small-scale engineering features such as stone waterways and stone culverts. Documentation regarding Rockefeller's direct involvement in the design and construction of the carriage roads, bridges, and gatehouses is catalogued in the park's archives.

The following narratives expand on each National Register criteria and apply to the entirety of the carriage road system within the boundaries of Acadia National Park. Future National Register documentation should address the levels of significance and the full extent of the carriage road system that is now in the park.

NATIONAL REGISTER CRITERION A

The historic carriage road system is locally significant under Criterion A for its association with the context identified in the MPDF, "Rustic Design (1890-1958)," in the areas of conservation, recreation, and transportation. The system is illustrative of efforts to conserve Mount Desert Island's landscape while providing a pathway on which the public could experience the island's picturesque scenery.

Recreational pursuits have a long history on Mount Desert Island, dating back to the nineteenth-century "rusticators" who came to see the island's natural scenery captured in paintings and writings by Thomas Cole and other artists. Protection of this scenery, and the primitive roads and trails that lead to it, began in earnest in the 1890s when the island was a popular destination for tourists and summer home to the wealthy. Around this time, there was a growing movement throughout the northeast United States to improve the physical and cultural qualities of villages and towns. To this end, several village improvement groups and societies were established on the island to beautify their towns and work cooperatively to map, improve, and maintain a system of existing trails and new trails to scenic destinations across the island. (MPDF 2007: E39-41,F85)

A larger conservation effort on the island began in 1901 with the establishment of the Hancock County Trustees for Public Reservations, which aimed to acquire and manage land for public use, including the protection of walking paths and scenic vistas. Comprised of summer residents as well as local merchants, doctors, lawyers, and naturalists, the Trustees received their first land parcels in 1908, and

by 1913 owned over 5,000 acres of land on Mount Desert Island. That same year, a decade-long ban of automobiles on the island was lifted in Bar Harbor, prompting summer resident John D. Rockefeller, Jr. to begin building carriage roads at his home in Seal Harbor, The Eyrie, so that he could enjoy unmotorized driving and sightseeing. When the ban was lifted in Seal Harbor and the rest of the island in 1915, Rockefeller received permission to extend his carriage roads on to Trustees lands with the stipulation that they be available for use by the public, to which Rockefeller agreed.

Many of the island's year-round residents and some local merchants were opposed to the increasing limits on places for development, prompting the Trustees to seek federal protection of the lands from the federal government. In 1916, with the financial support of Rockefeller and others, they successfully established Sieur de Monts National Monument, and the Trustees lands became part of the monument.

In 1918 Rockefeller received permission from Secretary of the Interior Franklin K. Lane to expand the carriage road system into the new park, which by this time was managed by the newly created National Park Service. As stated in the Organic Act of 1916, the new agency was directed "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment for the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The physical development of the parks was therefore intended to attract and accommodate people, and was to be accomplished, in part, through construction of roads and related visitor facilities. Through 1940, Rockefeller constructed public carriage roads to countless scenic and picturesque destinations on park lands as well as on lands he purchased and later donated to the park—an achievement deemed by the National Park Service as consistent with the Organic Act.

Throughout their construction history, the carriage roads, bridges, and gatehouses were designed to fit harmoniously in Mount Desert Island's landscape through careful and deliberate planning, graceful and rustic designs, and the use of natural materials and plantings. These qualities were embodied in the Rustic Design style embraced by Rockefeller and the National Park Service. The overall design intent for the carriage road system, like that of the hiking trail system that came before it and the motor road system that came after, was to capitalize on the island's character without destroying it, and to create a picturesque experience for its users that was both intimate and scenic.

The carriage roads were specifically constructed to provide horse-drawn carriage access to the natural resources and scenic beauty of the island. They were also meant to give carriage drivers a respite from the sights, sounds, and smells of automobiles. However, carriage-driving never developed in popularity as Rockefeller and others expected. Observing that the roads were little used for their original purpose, Rockefeller wrote Director Newton B. Drury in 1949 about the possibility of using the carriage roads for bicycling. Drury replied that the park's landscape architect, Benjamin Breeze, had conducted a study in the early 1940s and determined that they were suitable for bikes. However, bicycling as well as simply walking became more difficult and dangerous as the condition of the carriage road surfaces deteriorated from the 1960s through the 1980s. (Jacobi and Manning 1997: 3; HRS 1989: 318-319)

In the spirit of Rockefeller's philanthropy, an extensive rehabilitation of the carriage roads was

completed between 1992 and 1996. The projects were financed by federal construction funds along with matching private funds from Friends of Acadia, a nonprofit organization dedicated to protecting the natural beauty, ecological vitality, and cultural distinctiveness of the park and the surrounding communities. In subsequent years, bridges were rehabilitated and overgrown vistas were identified and prioritized for management to restore the picturesque experience for visitors that had been lost. As a result of these projects, the carriage road system once again provides a pathway on which the public can experience the island's picturesque scenery. Walking, hiking, and bicycling are the primary recreational uses, and in the winter cross country skiing, dog sledding, and snowmobiling are allowed on some sections. Horseback riding is available from Wildwood Stables, and a concessioner offers guided carriage drives to the summit of Day Mountain to watch the sunset.

NATIONAL REGISTER CRITERION B

The historic carriage road system and associated buildings and structures are nationally significant under Criterion B for their association with the context identified in the MPDF, "John D. Rockefeller, Jr. and the Development of the National Park System (1913-1958)," in the areas of conservation, recreation, and other (philanthropy). The system is perhaps the most important reflection of Rockefeller's direct involvement in the development of Acadia National Park and represents his earliest tangible involvement with other road design projects and philanthropic contributions throughout the National Park system.

Rockefeller's interest in road building can be traced to his father, who constructed a six-mile network of carriage roads at his childhood home, Forest Hill, in Cleveland, Ohio. Young Rockefeller performed some of the maintenance work himself, clearing brush, resurfacing roads, and planting trees at the estate. He later incorporated many of the same design features in carriage roads constructed on his estate at Pocantico Hills, New York. (MPDF 2007: E28)

The technical aspects of construction and a new challenge of building carriage roads on Mount Desert Island captivated Rockefeller. He began constructing carriage roads on his own and nearby estates on the island in 1913, and two years later received permission to extend his roads onto lands held by the Hancock County Trustees of Public Reservations. In 1918, Rockefeller was allowed to expand the system to scenic locations in the new park and to connect discontinuous sections (MPDF 2007: E28)

By all accounts a perfectionist, Rockefeller "would not be hampered by the precedent of inferior standards." To achieve this standard, Rockefeller surrounded himself with very talented and capable individuals. Beginning in 1916, construction of roads was supervised by engineer Charles P. Simpson, who was later replaced by his son Paul upon the elder Simpson's retirement. Paul Simpson, with fellow engineer Walters G. Hill, supervised the project through construction of the last carriage road in 1940. Prominent architects Grosvenor Atterbury, William Welles Bosworth, and Charles Stoughton, who all had worked on the Pocantico estate, acted as consultants on the project, assisting with the design of the gatehouses, bridges, and other landscape features. For the carriage road planting and vista design, Rockefeller consulted landscape architect Beatrix Farrand, who also designed a garden at The Eyrie, now known as the Abby Aldrich Rockefeller Garden. Local contractors, including A.E. Clement, C.D.

Joy, and S.W. Candage, were also employed on the project, as were a number of islanders from 1914 through the Depression. (MPDF 2007: E28-29, citing Collier 1964: 39)

Rockefeller also oversaw and approved the design and construction of gatehouses, concrete and masonry bridges, and rustic wood bridges along the carriage roads. In 1929, Atterbury embarked on a Rockefeller-funded tour of western national parks to find an appropriate architectural style, and suggested the use of high-pitched roofs and colors that harmonized with the surroundings. With Rockefeller's input, he selected a French Norman Revival style for its picturesque qualities and as a gesture to the area's French heritage. The distinctive Jordan Pond and Brown Mountain gatehouses were designed by Atterbury and completed in 1932. Bosworth built the first ten masonry bridges for Rockefeller between 1917 and 1928, although one of his designs for the Bubble Pond Bridge was redesigned and built by the National Park Service. For all of these bridges, as well as the six designed by Stoughton from 1929 to 1933, Rockefeller specified split stone rather than tool-edged stone to achieve a more rustic appearance, although this was not always the result. The design of the smaller wood bridges was planned with Mrs. Farrand and based on a style of bridge used on the roads at the Pocantico estate. Rockefeller chose to use these bridges at sites where he felt a more imposing masonry bridge would be inappropriate.

Rockefeller's painstaking attention to detail resulted in carriage roads that were consistently excellent in design and craftsmanship. His architects and engineers employed state of the art road construction technology to complete the system, and its gentle curvature and grades followed the natural topography. The roads exhibited distinctive features such as hand-laid rock, retaining walls, and coping stones for guardwalls, known locally as "Rockefeller's teeth." At its conclusion, the carriage road system was 57 miles long (44 miles are now within park boundaries), and included 2 gatehouses, 17 concrete and masonry bridges (all but one are in the park), and 12 steel stringer bridges with wood rails. Their distinctive features largely established the design character of Acadia. (MPDF 2007: E29)

Many of the same characteristics and techniques of the carriage road projects were used in the design of the Acadia's motor road system. Rockefeller's involvement began in 1922 when the park proposed motor roads from Eagle Lake to the Jordan Pond House and to the summit of Cadillac Mountain. Realizing that the presence of automobiles was not going to disappear, Rockefeller took great interest in the project and worked closely with National Park Service officials to plan a system of motor roads that would both facilitate efficient public use and enjoyment and provide a beautiful and finely constructed road network sited harmoniously with the island landscape. Such a system would also ensure that automobiles would stay off of his carriage roads. (MPDF 2007: E30)

Construction of the first motor road, the Jordan Pond-Eagle Lake Road, was completed in 1927. Though not without controversy, planning and construction of other segments continued until 1958 when the final segment of the loop around the eastern half of the island was completed. Throughout this time, the collaborations between Rockefeller and the Olmsted Brothers landscape architectural firm, Bureau of Public Roads, and the National Park Service resulted in excellent road designs that were sensitively integrated with the landscape and the existing carriage roads and hiking trails. In the beginning years of the motor road project, Rockefeller's role focused on design, construction, and direct project funding.

When the government began appropriating money for road construction in the mid-1930s, his role changed to acquiring and donating the land needed for the remaining motor road segments, which allowed him to essentially retain direct control over the design and the quality of the roads and bridges. Regarding his concerns or ideas about the motor roads, Rockefeller never hesitated to contact anyone, including the Secretary of the Interior in Washington D.C. Rockefeller's financial contribution to the 33-mile system on Mount Desert Island and the Schoodic Peninsula was over $4 million.

Rockefeller's interest in park roads was not limited to Acadia. During a 1924 visit to Yellowstone National Park, Rockefeller met Horace M. Albright, then serving two roles as park superintendent park and assistant director of the National Park Service. Albright later succeeded Stephen Mather as director in 1929. Rockefeller and Albright forged a strong lifelong friendship that affected development in Acadia, Yellowstone, and Grand Teton National Parks. From 1924-1925, Rockefeller sought to improve the condition of roads at Yellowstone, initially funding the clearing of debris by removing downed timber and improving roadside conditions between Mammoth Hot Springs and Obsidian Creek. The project was so successful that he extended funding for another year. Rockefeller also provided leadership for the nationwide Roadside Improvement Program. Within the next few years, nearly $7 million were appropriated and spent on road beautification nationwide, which Albright mainly attributed to Rockefeller's work at Yellowstone. (MPDF 2007: E25-26)

Rockefeller helped establish several national parks. In 1926, Rockefeller and Albright visited Jackson Hole, Wyoming, and became enchanted with the Teton Mountains, but expressed concerns about unsightly commercial development on the valley's western side. Albright explained that efforts to include the range in Yellowstone National Park had been thwarted, mainly by cattle and dude-ranching interests. In response, Rockefeller formed the Snake River Land Company to buy up and clean up the land anonymously with the idea of donating it to the National Park Service. Grand Teton National Park was created in 1929, but it was not until the late 1940s that the land was transferred. In the 1950s, Rockefeller contributed additional funds to expand the park and construct three lodges owned by his Grand Teton Lodge Company. In 1972, the 82-mile John D. Rockefeller, Jr. Memorial Parkway was established between Grand Teton and Yellowstone parks to commemorate his contributions to the national parks. (MPDF 2007: E26-27)

Rockefeller also financed conservation and educational projects in the national parks. In 1928, he contributed $1.5 million to save Yosemite Valley's outstanding pine forest from logging. He contributed approximately $250,000 to assist with establishment of Shenandoah National Park in 1935, and $5 million to Great Smoky Mountains National Park, established in 1930 but not dedicated until 1940. According to noted national parks scholar Robin Winks, author of "The Rockefellers and National Parks," these projects were an example of Rockefeller's dual agendas to create conservation areas and to promote recreational tourism to lift the standard of living of the region. This linkage of economics and conservation was compatible with the national park ethic that prevailed in the 1930s. Rockefeller also donated funds for an interpretive center at Mesa Verde and contributed to construction of museums at Yosemite and Yellowstone, a study center at Crater Lake, "trailside museums" in other parks, as well as money to various state parks and other public areas. (MPDF 2007: E25-27)

Between 1924 and 1960, Rockefeller gave over $40 million to national and state parks. According to Rockefeller biographer Raymond Fosdick, however, it is Acadia more than any other park that bears the marks of Rockefeller's "persistent care and effort." Rockefeller first visited Mount Desert Island in 1908, and in 1910 he purchased The Eyrie and joined the Village Improvement Society. Seven years later he became a member of the Roads and Paths Committee and was made an officer of the society in 1926. Although accused by his critics of viewing nature from trains and automobiles and well-manicured paths, Rockefeller was interested in and personally involved with all aspects of Acadia' s development. This personal involvement—which included providing the vision for the carriage and motor road systems, selecting designers, and supervising construction—distinguishes his contributions at Acadia from his contributions to other national parks. (MPDF 2007: E25,E27-28)

NATIONAL REGISTER CRITERION C

The historic carriage road system is nationally significant under Criterion C for its association with the context identified in the MPDF, "Rustic Design (1890-1958)," in the areas of architecture, engineering, and landscape architecture. The system represents one of the finest collections of broken-stone carriage roads in the country and also influenced the design of Acadia's nationally significant motor road system. The Rustic Design context includes two subthemes, "The Picturesque Style (1890-1950)" and "The Rustic Design of the National Park Service (1916-1958)," which have different historical origins but in practice blend seamlessly together.

The Picturesque style grew out of the eighteenth century English garden and park traditions that emphasized scenic views and a naturalistic appearance. The style influenced the writings of Andrew Jackson Downing (1815-1852) and the landscape designs of Frederick Law Olmsted, Sr. (1822-1903), Frederick Law Olmsted, Jr. (1870-1957), and others who promoted an aesthetic appreciation for the picturesque qualities of the natural environment. By the end of the nineteenth century, the Picturesque style incorporated natural elements and materials to create a scenic effect that appeared naturalistic rather than artificial and contrived. These naturalistic and romantic qualities also paralleled the style of American landscape paintings in the mid to late nineteenth century. (MPDF 2007: E34-E35)

The landscape of Mount Desert Island was well suited to the picturesque genre, and the island was a popular topic of artistic expression in the late nineteenth century. Many noteworthy architects, landscape architects, and builders completed commissions on the island between 1880 and 1920, including expansive summer cottages and civic improvements in the village centers, adapting popular design styles to fit the island's rugged topography. The Picturesque style also influenced the development of the island's hiking trail system by the local village improvement groups. A careful attention to the route and alignment, proximity to unique geologic or water features, variations in the character of different trail types, and dramatic views all contribute to the picturesque qualities of the trails. (MPDF 2007: E39-40,E44)

In the design of the carriage road system, John D. Rockefeller, Jr. applied the characteristics of the Picturesque style to what was essentially a massive road construction project, utilizing natural materials such as heavy stone curbing and granite coping stones, and saving trees whenever possible, and

highlighting the island's dramatic scenery. The intent of Rockefeller's carriage road system was to create a pathway on which users of the land could experience this extraordinary landscape and therefore feel restored by nature. Furthermore, the masterful design and craftsmanship executed in carriage roads required a critical eye, detailed on-site decisions and adjustments, and skilled engineers, architects, and road builders. Rockefeller employed all of these methods to create one of the finest systems of carriage roads in the country, and later used them in the design of the park's nationally-significant motor road system. (MPDF 2007: E44)

The origin of the National Park Service Rustic Design style can be traced back to the nineteenth and early twentieth century social movements to protect and preserve natural scenery for the public's benefit. In 1916, Frederick Law Olmsted, Jr. articulated this philosophy in the enabling legislation of the National Park Service, which sought to conserve natural scenery in parks while providing public access to them. In the early years of the agency, landscape architects, architects, and engineers recognized the need to develop unified design principles and standards that would guide the development of park facilities and simultaneously protect the natural, cultural, and scenic resources in the parks. This new style came to be known as National Park Service Rustic Design. It drew primarily from the Picturesque style, as well as the Prairie style that emphasized the use of native plants and materials as practiced by landscape architect Jens Jensen and others. (MPDF 2007: E35,E61-E62)

In the National Park Service Rustic Design style, constructed features utilized labor-intensive methods that created a rugged, frontier-like quality appropriate to a wilderness setting. Though general design standards remained the same throughout the parks, features were typically customized with local materials, such as stone or wood, to fit the environment in which they were constructed. By the end of the 1920s, National Park Service Rustic Design guided plans and specifications for site features and structures, techniques for the location of roads and trails in relation to natural scenery, methods to repair construction damage to natural conditions, and construction of park facilities. (MPDF 2007: E35,E61-E62)

The lone example of National Park Service Rustic Design on the carriage road system is the Triad-Day Mountain Bridge. However, the style can be observed in numerous segments of the motor road system designed and constructed by the National Park Service and the Bureau of Public Roads, including the Day Mountain Road over which the Triad-Day Mountain Bridge passes.

Rustic Design and Acadia's Carriage Roads:
Early experiences with road and bridge construction at his family estates and his familiarity with roads in public parks prepared Rockefeller for building carriage roads on Mount Desert Island. Outdoor life at Forest Hill, the family's summer estate near Cleveland, had a direct influence on young Rockefeller, where he and his siblings took great delight in an informal picturesque landscape replete with undulating topography, woodlands, and magnificent views to Lake Erie. At an early age, Rockefeller carved wood signs for roads at Forest Hill and joined his father in activities related to construction and expansion of the property. This included construction of carriage roads (pleasure drives) complete with coping stones and rustic masonry bridges, as well as tree planting and the creation of two lakes. Here, Rockefeller developed a strong foundation in road building and an acute appreciation for preservation of

landscape scenery. At the family's home at Pocantico Hills, acquired in 1893 along the Hudson River in New York, his father continued the tradition of road construction, including the use of coping stones and rustic masonry bridges. The subsequent development of the 2,500-acre estate was largely supervised by Rockefeller including construction of over 50 miles of carriage roads. The family spent a considerable amount of time during the winter in New York City, often including carriage rides (or "coaching") in Central Park where Rockefeller experienced the importance of public landscapes. (MPDF 2007: E45)

John D. Rockefeller, Jr. began spending summers on Mount Desert with his wife Abby Aldrich and their growing family in 1908, first renting a house in Bar Harbor and then acquiring and expanding The Eyrie, his 150-acre summer estate in Seal Harbor, in 1910. Rockefeller discreetly acquired additional land both adjacent to the original acreage as well as elsewhere on the island, and in 1913 began constructing carriage roads, beginning first near The Eyrie and gradually expanding the system on his land and park land on the eastern half of the island. (MPDF 2007: E45-46)

Road Layout.
Rockefeller possessed a keen eye toward quality construction and the art of road design, and understood the value in surrounding himself with technical experts who could carry out the work according to his intentions. In the case of carriage roads at Acadia, Rockefeller engaged engineers Walters Hill, Charles Simpson, and Paul Simpson to assist him and thus ensure a finely executed project. Rockefeller, in concert with his engineers, developed an efficient and precise method for carriage road design and construction: establishment of an initial route; field reconnaissance; survey with notes regarding cut, fill, and drainage issues; establishment of the horizontal alignment and vertical profile of the landscape to fit the road to the natural topography; and establishment of the exact coordinates of the proposed road alignment and the preparation design plans showing the road on a topographic survey. (MPDF 2007: E46)

In planning the carriage roads, Rockefeller skillfully applied his interest in scenery, working with the Simpsons to study existing topography and vegetation and locating roads to maximize views of island features as well as the carriage road bridges. Rockefeller and his road builders also employed state of the art engineering methods to accomplish the essential elements of road design, such as horizontal and vertical alignment and broken-stone road construction. (MPDF 2007: E46-47)

Engineering Systems.
In addition to road alignment, the layout of the carriage road system presented a consistent vocabulary of coping stones, walls, drainage features, and roadside grading. Coping stones lined the outside slopes of many segments of the carriage roads, and provided both a safe guardrail as well as a rustic, picturesque feature. Large, irregular granite boulders were to be set at irregular angles, approximately one foot apart to provide a physical barrier when needed. As a result, they became a signature characteristic of the road system known locally as "Rockefeller's teeth." The same treatment occurs on carriage roads at the family compound at Pocantico Hills. (MPDF 2007: E47)

Hand laid stone retaining walls on the upslope (cut) and downslope (fill) sides of the road minimized the

amount of adjacent land affected by the road construction, while stone waterways and culverts conveyed stormwater runoff alongside and under the roadways. Stone box culverts were built at locations where the road crossed intermittent streams or where waterflow was consistently high, while corrugated metal or reinforced concrete pipes were used elsewhere. Stone headwalls provided extra reinforcement and also hid the pipe openings. In some instances, stone waterways were built on the hillsides above the roads to intercept and direct runoff. (MPDF 2007: E47)

Roadside grading and clearing also contributed to the fine design and overall character of the road system. Rather than leave roughly graded cut and fill areas with downed trees adjacent to the roadway, Rockefeller recommended that these areas receive more finished grading. In addition, Rockefeller directed his crews to remove downed timber to create an aesthetically pleasing view from the road. (MPDF 2007: E47)

Bridges.
As he did in the design and engineering for carriage roads, Rockefeller adopted the prevailing standards for bridge design, with a specific focus on fitting bridges to their setting. According to William Rieley and Roxanne Brouse, authors of the "Historic Resource Study for the Carriage Road System," the bridges followed a series of design principles established by Henry Tyrell in his 1912 book, Artistic Bridge Design: bridges should fit in with their environment; an "economy of materials" should be employed; the method of bridge construction should be revealed in its appearance; the relative proportions and form of the bridge should be well-chosen; small bridges need a finer outline and more detail than larger bridges; and bridges should be ornamented, but not excessively. Hubbard and Kimball's "An Introduction to the Study of Landscape Design" (1927) and Goode's "Park and Recreation Structures" (1938) also contained design principles that were illustrated in Acadia's carriage road bridges. Although both books postdated some of Rockefeller's carriage roads, they included principles for landscape structures evident at Acadia. (MPDF 2007: E47, citing Tyrell 1912: 51)

Working with his engineer, Rockefeller determined locations for bridges that were either necessary because of topography or existing drainage, or desirable for aesthetic or visual purposes. For large masonry bridges, Rockefeller worked with an architect to develop plans and detailed construction specifications. Most of these bridges were constructed of concrete and steel and faced with stone. As recommended by the aforementioned authors, the stone facing was granite, the prevailing native stone and in some cases, the bridges appear to extend directly out of the exposed bedrock. In addition, each bridge in the carriage road system was distinctive, reflecting both stylistic differences as well as the unique site conditions. Like the coping stones on the carriage roads, parapet walls were kept low to provide unimpeded views of the adjacent landscape. (MPDF 2007: E48)

Several noteworthy architects and landscape architects worked on the design of Rockefeller's carriage road bridges. Williams Wells Bosworth (1869-1966) designed ten of the earliest bridges between 1917 and 1928. Bosworth was educated at the Massachusetts Institute of Technology and then employed by several firms including F.L. Olmsted and J.C. Olmsted, Landscape Architects, where he worked on plans for Stanford University. He completed a European tour with William Rotch Ware, and studied in London and at the Ecole des Beaux-Arts in Paris. By World War I Bosworth had his own successful

practice and in addition to the carriage road bridges designed the gardens and house at Pocantico Hills and the interior of Rockefeller's house in Manhattan. After serving in World War II in France, he returned there to oversee work funded by Rockefeller to aid in the restoration of Versailles, Rheims Cathedral, and Fontainebleau. (MPDF 2007: E48-49)

The first of the carriage road bridges was a Cobblestone Bridge (outside of the park) built in 1917 on the Gardiner-Mitchell Hill-Jordan Stream Road. The bridge was built of reinforced concrete and faced with "natural moss-faced rocks" recommended by Paul Simpson, from which its name is derived and which were specifically intended to create a less artificial and more harmonious appearance. A massive 28-foot arch and battered semi-circular turrets further characterized this unique bridge. The Hemlock Bridge was a massive, 200-foot curved bridge that carried the Jordan-Sargent Mountain Road over a deep rocky ravine created by the Maple Spring Brook. The bridge's 37-foot Gothic arch is flanked on either side by smaller blind gothic arches. The difficult, yet spectacular site conditions in this location necessitated careful ground inspection and preliminary staking in advance of construction to ensure that the site was not adversely affected by construction. The Deer Brook Bridge is one of the few bridges in the carriage road system with more than one visible arch: two narrow 9-foot arches with a 6-foot pier cross Deer Brook. A decorative medallion with the bridge's construction date is centered between the two arches. Three smaller masonry bridges were modeled after a similar design at the end of Swan Lake in Central Park: Jordan Stream Bridge, Little Harbor Brook Bridge, and Hadlock Brook Bridge. All three are more modest in scale with a single arch. Bosworth's initial design for the Bubble Pond Bridge was rejected and redesigned by the National Park Service. (MPDF 2007: E49)

Charles Stoughton (1871-1945) designed six of the later carriage road bridges between 1928 and 1933. Stoughton attended Columbia University and the Massachusetts Institute of Technology, where he studied under Professor Ware. He practiced with his brother Arthur under the firm name of Stoughton & Stoughton, and designed bridges and other structures for the Bronx Parkway Commission, police stations in Manhattan, and a number of plans for two educational institutions abroad. Stoughton's Duck Brook Bridge is considered by some to be the most refined and sophisticated of the carriage road masonry bridges. Like the later Stanley Brook Bridge, Duck Brook is a triple-arch bridge over 200 feet in length with corbelled lookouts and periodic openings in the parapet wall. Beatrix Farrand designed the plantings around the bridge to frame views and enhance the setting. Three bridges were built along the Amphitheatre Road (Asticou-Jordan Pond Road): the Amphitheatre Bridge, one of the largest in the system, extends 245 feet over the Little Harbor Brook. The asymmetrically curved plan and 32-foot arch was specifically designed to retain two large trees on the site and to align the axis of the arch with an existing waterfall. The Cliffside Bridge, which spans a ravine on the flank of Jordan Mountain, extends 250 feet, also with an asymmetrical plan, 50-foot segmented arch, and crenellated parapet walls. To enhance its harmonious effect, the bridge appears to be built out of the natural rock ledge. The design for the West Branch Jordan Stream Bridge was inspired by a small footbridge in the ramble at Central Park that features a narrow Roman arch. The Jordan Pond Road Bridge is unique in that it carries the Seal Harbor (formerly Jordan Pond) road over the Day Mountain Carriage Road to provide a greater separation and sense of seclusion for the carriage road. The second triple-arch bridge, the Stanley Brook Bridge carries the Barr Hill-Day Mountain Road with three distinct arches over the Stanley Brook (motor) Road, the seaside trail, and the Stanley Brook watercourse. It is one of the most

formal of the carriage road bridges and is noteworthy for its landscaping by Farrand. (MPDF 2007: E49-50)

The Cobblestone Bridge designed by Bosworth is still privately owned, but the other sixteen bridges are within the park's boundaries. The final bridge constructed as part of the carriage road system was the Triad-Day Mountain Bridge, which was built by the Bureau of Public Roads and the National Park Service in 1940 to span the Day Mountain Motor Road and serve as a connection between the Bubble Pond carriage road to the north and the Barr Hill-Day Mountain and Day Mountain Loop carriage roads to the south. The bridge represents the use of the National Park Service Rustic Design style. Its design was reminiscent of the earlier Rockefeller bridges, and especially the Stoughton's Jordan Pond Road Bridge, but had a precision quality to its arch and stonework that was not characteristic of those bridges.

Three sets of steel and wood stringer bridges, all similar in construction, were first developed for the Rockefeller estate at Pocantico Hills with design input from Farrand. These small, rustic bridges included the Jordan Stream Little Bridges (3) built 1918-1919, Eagle Lake Little Bridges (3) built 1929-1930, and Seven Sisters Little Bridges (6) built 1930-1931. (MPDF 2007: E50-51)

Landscaping and Views.
While Rockefeller and his engineers designed the alignment of the carriage road system, Beatrix Farrand was responsible for detailed decisions and recommendations related to the treatment of roadside vegetation. Beatrix Farrand [nee Jones] (1872-1959), the niece of Edith Wharton, studied landscape design briefly in Berlin and at the Arnold Arboretum under Charles Sprague Sargent. In 1895, Farrand opened a professional office in New York City and immediately began designing estates for family friends and associates. In 1899, she was one of the ten founding members of the American Society of Landscape Architects. Although few of her early designs remain, Farrand may be best known for her 1921-1947 work for Mildred and Robert Woods Bliss at Dumbarton Oaks in Washington, D.C. (MPDF 2007: E51)

Farrand was already an established practitioner when she began working with Rockefeller on the carriage road system. As a summer resident of Mount Desert Island, Farrand's Reef Point estate was well known for its naturalistic planting and unique collection of rhododendron and azalea. Farrand began working with Mrs. Rockefeller on landscape design work at The Eyrie, which ultimately produced one of the most well-known private gardens in the country. She worked closely with Rockefeller between 1928 and 1935 on a number of issues related to the design and construction of carriage roads, including planting, clearing of vistas, grading, drainage, bridge design, and landscaping for the two gate lodges. In this capacity, Farrand's principle associate was Rockefeller's nurseryman, Charles Miller, with whom she traveled extensively over the newly constructed roads, making notes that articulated her specific recommendations. (MPDF 2007: E51)

Farrand's contribution to the design of the carriage roads helped to create a sequence of views from which the dramatic scenery of the island would gradually and subtly unfold. In addition to recommending where vistas should be located, she provided detailed recommendations for the design of

the foreground or view frame, particularly to noteworthy natural features. Farrand also paid special attention to the design of views of the spectacular carriage road bridges. In some locations, where natural or built features were lacking, Farrand introduced new plantings to enhance the visual interest. She also worked with Charles Miller to re-vegetate slopes following road construction. Most of her work was destroyed in the fire in 1947, though plantings remain around the bridges in the southern part of the island and possibly the gatehouses. (MPDF 2007: E51-52)

Gatehouses.
Rockefeller commissioned Grosvenor Atterbury and his partner John Thompkins to design the first of two gatehouses to control entry into the carriage road system. Atterbury (1869-1956) attended Yale, Columbia, and the Ecole des Beaux-Arts in Paris, and is known for his work designing country houses and New York apartments for wealthy industrialists and for his experimentations with new materials and structures. In 1909, Atterbury and the Olmsted Brothers received a commission to design the planned community of Forest Hills Gardens in New York. He also completed a number of commissions for Rockefeller, including a barn complex at the family estate at Pocantico Hills. (MPDF 2007: E52)

In 1929, in advance of any architectural work at Acadia, Rockefeller arranged for Atterbury to complete an architectural study tour of western national parks, which resulted in a report that outlined a series of principles for the architecture of the national parks: site buildings so that they do not compete with the scenic marvels that have justified the establishment of the Park area; develop a style from local historic precedents that will also satisfy the modern practical requirements; in cases where no such local precedents exist, adopt a foreign style that has been produced under similar climatic and scenic conditions and which can be properly expressed in local materials. (MPDF 2007: E52-53)

Adhering to these principles, Atterbury worked with Rockefeller to determine an appropriate style for the gatehouses Rockefeller wanted to build along the carriage roads on Mount Desert Island. Lacking a local ancient architectural tradition in the region, Atterbury chose to evoke the Colonial-era French associations in the region through the use of a “foreign” Rustic Norman style, reminiscent of European hunting lodges. He described the style as a “French type which originated in the Romanesque period and which is found in picturesque abundance in certain parts of France.” The buildings were constructed of granite masonry after a local style in the Le Puis district of France in which the stone is coursed so that the walls present a banded appearance. French precedent also inspired the center arched openings flanked by two towers. Atterbury incorporated other elements of his design philosophy for national parks in the gatehouses. He used high-pitched roofs, which he advocated in his 1929 report as “the logical, practical, as well as the picturesque type”. He also chose exterior colors (shades of brown, red, and black) that harmonized rather than contrasted with the natural surroundings, in keeping with his belief that color’s “power of camouflage is almost as great in building as in the case of animals.” Atterbury also sited the buildings inconspicuously amid the forest at the edge of the road. (Kline 2012: Sec.8: 15, citing Letter, Peterson to Albright, 1931 and Atterbury 1929: 1)

The Brown Mountain Gatehouse complex is located near Lower Hadlock Pond, at the west end of Asticou-Jordan Pond Road, and includes a carriage house, lodge, and gate, all joined by a connecting fence. The lodge features a granite block first story with a banded appearance and half-timbered

second story. The banding is carried through the entire complex as a unifying element, while special care was taken in the design of the cypress half-timbering so that the structure appeared weathered immediately after construction. The overall effect of the complex, nestled in trees along the carriage road, is one of "rich variation in texture, materials, and ornament interspersed in a composition of strong horizontal and vertical design elements." It was completed in 1931. The Jordan Pond Gatehouse complex is situated just south of the Jordan Pond House, at the beginning of the Bubble Pond Road, and consists of a carriage house connected to a gatekeeper's house by an open-air passageway, and two gate towers. It was constructed in 1932. Like the Brown Mountain Gatehouse, the Jordan Pond Gatehouse also illustrates the French Norman Revival style and is constructed of granite with a cypress half-timbered second story and steeply pitched roof sheathed in terra cotta tiles. Rockefeller and Atterbury planned a third gatehouse at Eagle Lake, including a lodge, tea house, and livery, but the complex was never constructed. Rockefeller also asked Beatrix Farrand to assist in designing the landscape setting for the gatehouses. Doing so set up a somewhat contentious relationship between the architect and landscape architect, it appears that Rockefeller was able to appease the strong desires of both designers. (MPDF 2007: E53-54, citing Krog 1979, Sec.7: 6)

The buildings Atterbury designed for Rockefeller struck a balance between the "rustic" rawness of many Western national park buildings, which often incorporated large boulders and logs, and the more sophisticated mansion-sized "cottages" already located on Mount Desert Island—acknowledging that this national park had a different context than the remote Western parks. The National Park Service embraced Atterbury's ideas with regard to Acadia. In October 1931, Park Service Landscape Architect Charles E. Peterson met with Acadia's Superintendent Dorr and Atterbury in Seal Harbor, Maine, while the latter was visiting the park to inspect the recently completed gatehouses. Dorr noted in their conversation that the architectural style Atterbury had chosen was particularly appropriate for Acadia, since the Sieur de Monts had originally come from the Le Puis region of France. Peterson also expressed his approval of Atterbury's work, explicitly stating in a memorandum to Park Service Director Albright that "Mr. Atterbury has hit upon exactly the right thing, and I believe that if we could begin work right now and cooperate with Mr. Rockefeller in architectural style, the Park would greatly benefit by such a movement." (Kline 2012: Sec.8: 15, citing Letter, Peterson to Albright, 27 October 1931)

Atterbury applied the same principles that informed the gatehouse project to the design of other buildings at Acadia, creating a cohesive aesthetic across discontinuous sections of the park. The design of the Apartment Building and Power House at the Schoodic Point Naval Radio Station on the Schoodic Peninsula featured many of the same architectural elements as the gatehouses, such as steeply pitched roofs, masonry walls with granite and brick laid in alternating bands, and terra cotta roof tiles. Similar rooflines were also used on the ranger station at Thunder Hole and other park buildings. (Kline 2012: Sec.8: 15-16)

Chronology & Physical History

Cultural Landscape Type and Use

Cultural Landscape Type: Designed

Current and Historic Use/Function:

Primary Historic Function: Outdoor Recreation

Primary Current Use: Outdoor Recreation

Other Use/Function	Other Type of Use or Function
Family Duplex	Historic
Dormitory (Bunkhouse)	Current
Pedestrian Circulation	Both Current And Historic
Vista	Both Current And Historic
Horse/Bridle Trail	Both Current And Historic
Hiking Trail	Both Current And Historic
Ski Trail (Cross-Country)	Both Current And Historic
Bicycle Trail	Both Current And Historic
Snowmobile Trail	Both Current And Historic
Trail Bridge	Both Current And Historic

Current and Historic Names:

Name	Type of Name
Historic Carriage Road System	Current
Carriage Road System	Both Current And Historic
Carriage Roads	Both Current And Historic
Horse Roads/Horse Trails	Historic

Ethnographic Study Conducted: No Survey Conducted

Chronology:

Year	Event	Annotation
CE 1604	Explored	Samuel de Champlain explores and names “Isle des Monts Deserts,” or Mount Desert Island, for its rocky and treeless summits.

CE 1688	Settled	Private ownership begins when Mount Desert Island is given as a feudal fief by Louis XIV to Antoine de Lamothe, the self-proclaimed Sieur de la Mothe Cadillac.
CE 1713	Settled	Louis XIV is defeated and all of the Acadia region lands (except Cape Breton) ceded to England.
CE 1763	Settled	English begin settling area after Treaty of Paris is signed.
CE 1777	Built	A road between Cromwell Cove in Bar Harbor and Sand Beach is in use by 1777. Today it is called Schooner Head Road.
CE 1827	Built	By 1827, a toll bridge is built across the Mount Desert Narrows to connect the island and the mainland.
CE 1844	Explored	Thomas Cole, a leading artist of the Hudson River School, arrives on Mount Desert Island. This marks the beginning of the island's tourist economy as other artists, writers, scientists, and travelers begin to flock to the area. In time, wealthy visitors build massive summer 'cottages.'
CE 1866	Built	Road built leading to Otter Creek and Otter Cliffs. It is now called Otter Creek Road.
CE 1877	Built	On Mount Desert Island, the Town of Bar Harbor builds Ocean Drive between Schooner Head Road and Otter Creek Road.
CE 1901	Established	George Dorr and Charles Eliot organize the Hancock County Trustees of Public Reservations to acquire land parcels on Mount Desert Island to protect water supply and preserve walking paths and scenic vistas. It receives tax-exempt status in 1903.
CE 1903	Established	Maine legislature permits towns to ban automobiles. Some of the roads near Bar Harbor are affected.
CE 1909	Established	Automobiles banned throughout Mount Desert Island.
CE 1910	Purchased/Sold	John D. Rockefeller, Jr., purchases and expands a house on Barr Hill, named "The Eyrie," in Seal Harbor.

CE 1913	Established	Automobile ban is lifted on the island.
CE 1913 - 1916	Built	The Barr Hill Roads are constructed at The Eyrie.
CE 1915	Planned	Rockefeller envisions additional carriage roads from The Eyrie to the Jordan Pond House, and between Jordan Pond and Brown Mountain Road via the Amphitheatre Valley.
	Planned	Trustees grant Rockefeller permission to build carriage roads on their lands as long as the roads are open to the public.
CE 1916	Established	The National Park Service is established.
	Established	On July 8, Sieur de Monts National Monument is designated. It is comprised of around 6,000 acres that were under the stewardship of the Trustees.
CE 1916 - 1917	Built	Gardiner-Mitchell Hill-Jordan Stream Road is constructed. It includes two road sections within the park's current boundaries.
CE 1917	Built	Cobblestone Bridge is built.
CE 1918	Built	Jordan Stream Bridle Path is constructed.
	Built	The three Jordan Stream Little Bridges are built on the Jordan Stream Bridle Path.
CE 1918 - 1919	Built	Little Harbor Brook Road is constructed.
	Built	Western and eastern portions of the Asticou-Jordan Pond Road are constructed, but the portion through the Amphitheater valley is not.
CE 1919	Built	Little Harbor Brook Bridge is built on Little Harbor Brook Road.

	Established	On February 16, Sieur de Monts National Monument becomes Lafayette National Park, becoming the first national park east of the Mississippi River.
CE 1920	Built	Jordan Pond Dam Bridge is built on Asticou-Jordan Pond Road.
CE 1921	Planned	Rockefeller envisions additional carriage roads from the Jordan Pond House to Bubble Pond; around Jordan, Sargent, Little Brown (now Parkman), and Cedar Swamp Mountains; along the west side of Eagle Lake; and along the south side of Eagle Lake.
CE 1922 - 1928	Built	Jordan-Sargent Mountain Road is constructed.
CE 1922 - 1926	Built	Hadlock Brook Bridle Path is constructed.
CE 1924 - 1926	Built	Eagle Lake Road (West) is constructed.
CE 1924	Built	Hemlock Bridge is built on Jordan-Sargent Mountain Road.
CE 1925	Built	Waterfall Bridge is built on Jordan-Sargent Mountain Road.
	Built	Deer Brook Bridge is built on Jordan-Sargent Mountain Road.
CE 1926	Built	Chasm Brook Bridge is built on Jordan-Sargent Mountain Road.
	Built	Hadlock Brook Small Stone Bridge is built on Hadlock Brook Bridle Path.
CE 1926 - 1927	Planned	Rockefeller envisions additional carriage roads on lands north of Eagle Lake and around the north and east side of Eagle Lake.
CE 1927	Built	Eagle Lake Bridge is built.

CE 1927 - 1929	Built	Eagle Lake Road (East) is constructed.
	Built	Hulls Cove Road is constructed.
	Built	Paradise Hill Loop is constructed.
CE 1928 - 1930	Built	Bubble Pond Road is constructed.
CE 1928	Built	Bubble Pond Bridge on Bubble Pond Road is built.
CE 1929	Built	Duck Brook Bridge is built, connecting the Hulls Cove carriage road to Duck Brook Road (now New Eagle Lake Road).
	Established	On January 19, Lafayette National Park becomes Acadia National Park.
CE 1929 - 1930	Built	The three Eagle Lake Little Bridges are built on Eagle Lake Road (East).
CE 1930	Planned	Rockefeller envisions additional carriage roads through Southwest Valley, Kebo Valley, and around Day Mountain.
CE 1930 - 1931	Built	The six Seven Sisters Little Bridges are built on Aunt Bettys Pond Road.
CE 1930 - 1932	Built	Amphitheater Road (part of Asticou-Jordan Pond Road) is constructed.
CE 1930 - 1934	Built	Aunt Betty Pond Road is constructed.
	Built	Barr Hill-Day Mountain Road is constructed.
CE 1931	Built	West Branch Jordan Stream Bridge is built on Amphitheater Road (Asticou-Jordan Pond Road).

	Built	Amphitheatre Bridge is built on Amphitheater Road (Asticou-Jordan Pond Road).
	Built	The Brown Mountain Gate Lodge is constructed at the western terminus of Asticou-Jordan Pond Road
CE 1932	Built	The Jordan Pond Gate Lodge is constructed at the western terminus of Bubble Pond Road.
	Built	Cliffside Bridge is built on Amphitheater Road (Asticou-Jordan Pond Road).
	Built	Jordan Pond Road Bridge built on Barr Hill-Day Mountain Road.
CE 1933	Built	Stanley Brook Bridge built on Barr Hill-Day Mountain Road.
CE 1935 - 1939	Built	Day Mountain Loop Road is constructed.
CE 1937 - 1940	Built	Day Mountain Summit Road is constructed.
CE 1940	Built	Triad-Day Mountain Bridge is built, connecting the Bubble Pond and Day Mountain carriage roads. This concludes construction of the carriage road system.
CE 1940 - 1960	Planned	Rockefeller establishes and implements a maintenance program for the carriage roads.
CE 1947	Destroyed	Fire burns much of Mount Desert Island. Rockefeller contributes to restoration efforts.
CE 1960	Established	After the death of Rockefeller in 1960, the National Park Service assumes maintenance of carriage roads.
CE 1962 - 1964	Abandoned	Thru motor traffic under Bubble Pond Bridge is eliminated with the realignment of the Jordan Pond/Eagle Lake Road. Access to a parking lot along the shore of Bubble Pond remains.
CE 1966 - 1969	Built	In the late 1960s, a spur road/trail is built from the Paradise Hill Loop to the new Hulls Cove visitor center.

CE 1970 - 1990	Neglected	Condition of carriage roads deteriorates due to inadequate maintenance and lack of funding.
CE 1985	Abandoned	The roadway under the Bubble Bond Bridge is converted to a trail with the abandonment of the parking lot next to Bubble Pond.
	Built	Carriage road intersections are numbered around this time, and small wood signs indicating the number are added to the intersection signposts.
CE 1986	Established	Friends of Acadia is incorporated as non-profit partner group for Acadia National Park.
CE 1989	Planned	"Historic Resource Study for the Carriage Road System, Acadia National Park, Mount Desert Island, Maine," and a companion document, "Recommended Guidelines for the Restoration, Maintenance, and Use of the Carriage Roads at Acadia National Park" determines that the carriage roads are a significant cultural, historic, and recreational resource.
CE 1990	Rehabilitated	A 1.4 mile demonstration project is completed to show the public what the carriage roads looked like when they were originally constructed and well-maintained.
CE 1991	Planned	Agreement forged between Department of the Interior and the Friends of Acadia to rehabilitate the carriage road system through federal funding and private money, and to establish an endowment to fund yearly maintenance in perpetuity.
CE 1991 - 1992	Planned	General Management Plan is completed, stating that carriage road rehabilitation will be undertaken, followed by a comprehensive maintenance program.
CE 1992 - 1993	Rehabilitated	The first phase of the rehabilitation project is directed at stabilizing the road system, which consisted of preservation maintenance and included cleaning roadside ditches, cutting vegetation growing in road shoulders and ditches, and road surface grading in areas of washouts. Environmental Assessment 1993:3)

CE 1993	Rehabilitated	In the fall of 1993, another test section, this time one mile in length, was done as a test project for preparing plans and specifications for rehabilitation of the entire carriage road system.
	Planned	Environmental Assessment completed, and four alternatives are presented. Alternative C is selected, and proposes rehabilitation of the carriage road system followed by a continuing maintenance program to maintain the roads to their repaired condition.
CE 1993 - 1995	Planned	Cultural Landscape Report, Bridge Reconnaissance Survey, and Vista Assessment Report completed.
CE 1994	Planned	Structural field inspection and historical research completed for the system's 17 masonry bridges and 12 steel stringer bridges.
CE 1994 - 1996	Rehabilitated	Rehabilitation of the carriage road system begins.
CE 2001 - 2004	Rehabilitated	Federal funds and park user fees pay for re-pointing, cleaning, and water-proofing of all carriage road bridges.

Physical History:

The historic carriage road system was constructed on Mount Desert Island by John D. Rockefeller, Jr. over a period of 27 years—the first segment was built on the property surrounding his Seal Harbor home in 1913, and the last bridge was completed between Day Mountain and The Triad in 1940. Its construction, then, began during the end of the Industrial Revolution and continued through World War I, the Great Depression, and the beginning of World War II. In addition to a narrative describing the intent, characteristics, and construction of the carriage road system, this section begins with general information relevant to its development and ends with details regarding its rehabilitation after decades of decline. The narrative is primarily extracted from the 1989 report, "Historic Resource Study for the Carriage Road System," by William Rieley and Roxanne Brouse, as well as from other sources.

FOOTPATHS AND ROADS, PRIOR TO 1913

Native American and European Settlements:
Up to the seventeenth century, coastal areas of Maine's Frenchman Bay region were the sites of small Native American camps. Settlements were reportedly located at Frazer Point on the Schoodic Peninsula, and seasonal encampments at several protected coves on Mount Desert Island. Native Americans were fishermen, hunters, and gatherers, who may have used stream valleys as routes to access the interior of the island for resources and as portage and carry routes. However, there is little documentation or archeological evidence for these routes. (CLR 2007: 15)

French and English settlers also intermittently occupied this area, and their numbers gradually increased after French navigator Samuel de Champlain explored Mount Desert Island in 1604, calling it "Isles de Monts Desert" because of its rocky and treeless summits. King Louis XIV granted the island to Antoine de la Mothe Cadillac in 1688 in an effort to establish an outpost of French feudalism, but widespread settlement did not follow due to the continual threat of war between England and France. After the Treaty of Paris ended the war between England and the American colonies in 1783, the English began to dominate the area and gradually displaced the earlier inhabitants. These new settlers also hunted and fished, but supplemented their livelihood through farming, logging, quarrying, and especially shipbuilding. This yielded surpluses of fish, lumber, ice, and granite that were traded locally and to distant ports. The Towns of Mount Desert, Eden (later Bar Harbor), Southwest Harbor, and Tremont were founded around this time. (CLR 2007: 15)

Old island footpaths were used to move goods and supplies, and over time some were widened for use as horse roads and for logging carriages. New roads were also built, ranging from rudimentary roads cut by loggers to public roads built to improve trade, such as a road from Cromwell Cove in Bar Harbor to Sand Beach, which was in use by 1777 (now Schooner Head Road). By 1827, a toll bridge was built across the Mount Desert Narrows to connect the island and the mainland. (CLR 2007:16).

The Influence of the Rusticators and the Cottagers:
By the mid-nineteenth century, tourism and recreation was beginning to displace the extraction

of natural resources as the driving force in the area's economy. In 1844 Thomas Cole, the leading artist of the Hudson River School, arrived on Mount Desert Island and captured many scenic views through writings, and more significantly, through landscape paintings. These works inspired other artists such as Frederic Church, Thomas Birch, and William Morris Hunt to visit, and attracted leading scientists of the day who studied the island's rich and diverse natural resources. Though improved, transportation in the area at this time was still difficult; Cole complained of the poor condition of the road to his lodgings, describing it as "… exceedingly bad, stony, overhung with beech and spruce, and, for miles, without inhabitant." (CLR 2007: 16-17; from St. Germaine and Saunders 1993: 24, as cited in HAER ME-11:9)

Thanks to Cole and others, an annual summertime influx of visitors called the "rusticators" descended on the area throughout the 1860s and 1870s. Visitors lodged at private homes or inns, such as the Jordan Pond House, and began using the old lumber roads as walking paths to scenic vistas, particularly routes along the shorelines and above the tree lines of the mountains. Paintings by the rusticators introduced the island to the larger public, and by 1880 Mount Desert Island was being hailed as one of the most beautiful vacation spots in the country. Wealthy visitors seeking relief from hot summers in Boston, New York, and Philadelphia were among the tourists, and many built massive summer homes, euphemistically known as "cottages," in and around Bar Harbor, Seal Harbor, and other towns. (CLR 2007: 16-17)

One of the more popular destinations at the time was the summit of Green (now Cadillac) Mountain. In 1853 the U.S. Coast Survey had built a rough road to its triangulation station at the summit, and the road became a popular path for hikers. In time a buckboard road, so named for the small wagons popular on the island, and later an improved carriage road were also built on the mountain's north slope to reach privately-run lodging and dining facilities on the summit. By 1883, a cog railway began operating from the east side of Eagle Lake to the summit, but by 1896 the railroad and hotel had gone out of business and were removed. Their demise coincided with a land boom and bust on the island in the 1880s. (CLR 2007: 16)

New and Improved Roads:
During this period, the island's year-round residents began to improve the local roads to serve the growing number of tourists and to encourage them to visit the island's natural wonders. By 1866, a road was built from Bar Harbor to Otter Creek and Otter Cliffs, and in 1887 Ocean Drive was constructed along the island's eastern shoreline from Schooner Head Road to Otter Cliffs, thus creating a loop from the coast through the Tarn valley. (CLR 2006: 24)

Progressive local citizens also thought of ways to extend the summer tourist season into fall. "A road shall be built along the shore of Eagle Lake," wrote a local reporter in 1888, "and thence through dense forests, across picturesque streams and brooks, and under overhanging crags and cliffs with mountains looming up on either side." The purpose of the road was to "at once call the attention of the public to it, so that before many months the nucleus of a fall resort will be established." As historian Neil Maher writes, "where roads had once been built to access and extract natural resources, now they were built to make the beauty of natural resources accessible to tourists; both were a means to achieve these economic ends." (CLR 2007: 17-18, from "A Grand Boheme," 25 October 1888, as cited in HAER ME-11: 12)

Preservation Efforts:
Increases in tourism and land development were paralleled by organized actions aimed at bettering public amenities and preserving the area's natural beauty. This effort began in earnest in the 1880s with the establishment of local village improvement associations and societies that improved the appearance of public areas in and around the island's towns. Walking paths linking towns to shorelines and mountain vistas were constructed, eventually expanding into an organized network of scenic and well-crafted trails. Some trails were endowed by association members, and received continued maintenance funding as well as commemorative markers. (CLR 2007: 18)

Throughout the country, the acquisition of land for preservation was deemed a worthwhile goal of village improvement groups. On Mount Desert Island, there was a growing concern among the summer residents that the island's natural resources were being squandered not only by the developers buying up huge tracts of land but also from lumbering, which had been made increasingly profitable through the introduction of the portable saw mill. In 1895, the Roads and Paths Committee of the Bar Harbor Village Improvement Association recommended its members donate or purchase parcels so that the trails and scenic vistas could be protected and preserved from developers and loggers. (CLR 2007: 18)

These calls to action did not have a great impact until 1901 when two summer residents, George B. Dorr, a founding member of the Bar Harbor Village Improvement Association, and Charles W. Eliot, president of Harvard University, gathered a group of residents to form the Hancock County Trustees of Public Reservations. Their mission was to acquire land parcels on the island, mainly to protect the local water supply while at the same time preserve walking paths and scenic vistas. In 1903 the Trustees were incorporated and given tax-exempt status by the state. In 1908, on behalf of the Trustees, Dorr helped facilitate acquisition of 85 acres of Cadillac Mountain summit area, and in 1909 purchased Boiling Spring at the north end of the Tarn valley, where a bottle works had once stood. Dorr built a spring house and a canopy over the spring to enable visitors to see the source of water, naming it Sieur de Monts (who commissioned Champlain's voyage that discovered Mount Desert Island). (CLR 2007: 18; HRS 1989: 58)

By 1913, the Trustees had preserved over 5,000 acres on Mount Desert Island. However, the organization had its share of critics who argued against removing large tracts of land from the tax roles and possibly discouraging development and commerce. Given the Trustees political vulnerability, Dorr argued that to protect the lands for all time the Trustees should seek federal assistance. Because there were several bills stalled in Congress proposing establishment of national parks, Dorr asked President Wilson to instead make these lands part of a national monument, which did not require an act of Congress. After much lobbying and title searches, the lands became part of Sieur de Monts National Monument, authorized on July 8, 1916. By this time the Trustee's reservation had grown to over 6,000 acres, protecting four lakes and ten mountains, with a contiguous boundary superimposed over a mosaic of donated lands with extant features. In 1919, the park became Lafayette National Park, and in 1929 the name was changed to Acadia National Park. (CLR 2007: 19)

The Role of Automobiles:
Land preservation efforts were not the only point of contention on Mount Desert Island during this time. The relationship between the year-round residents and the summer "cottagers" had become strained over the role of the newly introduced automobile. The automobile question was essentially a referendum on road building on the island; the year-round residents saw the roads as a pipeline for economic opportunity, by accommodating tourists and summer residents, while the summer residents viewed the roads as a threat to the reasons they came here in the first place, which was the island's isolated natural beauty. "It is to escape the sights and sounds of the city that intelligent people come in summer to such a place as this rough and beautiful island," wrote Charles Eliot in 1904, "the short season populations do not wish to be reminded in summer of the scenes and noises amid which the greater part of their lives inevitably passes." (CLR 2007: 19, from Goldstein 1992: 181, as cited in HAER ME-11: 12)

In 1903, the cottagers successfully lobbied the state legislators to give town voters the power to prohibit cars on the island. The cottagers won the vote to restrict cars from selected roads near Bar Harbor, and in 1909 were able to extend the ban throughout the island. Year-round residents protested the ban on economic and democratic grounds. One accused the "city millionaires" of attempting by "every means in their power to make Bar Harbor a quiet, exclusive resort where their little clique can have full sway and where no state of Maine man is welcome." George Dorr was able to promote a compromise lifting the vehicle prohibition in Bar Harbor, the economic hub of the island, but maintaining it in other towns. By 1913, however, automobiles were ubiquitous and the prohibition of cars was lifted. (CLR 2007:19, from "Opponents of Automobile Bill…," 27 January 1909, as cited in HAER ME-11:13)

DEVELOPMENT OF THE HISTORIC CARRIAGE ROAD SYSTEM (PART 1), 1913-1940

John D. Rockefeller, Jr.:
Among the summer residents troubled at the repeal of the automobile ban was John D. Rockefeller, Jr., who earlier in 1910 had purchased a 150-acre estate named "The Eyrie," on Barr Hill near Seal Harbor. Having resigned as director of his father's Standard Oil and J.P. Morgan's U.S. Steel to focus on philanthropic endeavors, Rockefeller had chosen Mount Desert Island for his summer residence because of the area's beauty and tranquility, as well as for its automobile-free roads for horse-back riding and carriage driving. (HRS 1989: 24-27,31)

Rockefeller shared his concerns about automobiles in 1915 when he donated money to the Trustees to complete the required title searches for the national monument. Writing to Charles Eliot: "Do you not feel that the establishment of this monument will bring an undesirable class of tourists to Bar Harbor in their automobiles who, if automobiles are admitted to the south side of the Island, will be a real nuisance to the residents there?" According to historian Neil Maher, it was the presence of cars that inspired Rockefeller to begin construction of carriage roads, first at The Eyrie and then eventually on lands held by the Trustees or owned by the park. (CLR 2007: 20; from Letter, Rockefeller to Eliot, 26 February 1915, cited in HAER ME-11: 15,17)

Rockefeller's keen interest in carriage driving and road building can be traced to his father and his childhood (Figure 1). In New York City, there were many family excursions to the recently

completed Central Park in the 1870s, where carriage paths designed by Frederick Law Olmsted and Calvert Vaux offered uninterrupted carriage riding thanks to the ban of omnibuses, hacks, and railroads from the drives and the diversion of city traffic to sunken roads cutting across the park. At his childhood home in Cleveland, Rockefeller often performed some of the maintenance on the estate's carriage roads, resurfacing, clearing brush, and planting trees. Later, at the family estate at Pocantico Hills north of New York City, he completed the carriage road system begun by his father, laying out the roads along the contours of the land and seeking out views that he thought were the best scenic highlights. This system eventually totaled approximately 50 miles and featured bridges of native stone and wood construction. During this time, Rockefeller became an excellent horseman and often indulged in carriage driving for his exercise and health. (CLR 2007: 20; HRS 1989: 24-27,31)

At The Eyrie and on Mount Desert Island, Rockefeller quickly found projects suited to his talents and goals. Biographer Raymond B. Fosdick noted that Rockefeller's lifelong involvement with the island, the community, and eventually the park was shaped by his desire to see its natural beauty preserved, the opportunity to undertake work of the highest quality and detail, and the need to build good roads. After the park was officially created, Rockefeller began purchasing additional lands to enlarge its boundaries and join the mountain summits together so that roads could be built. He also involved himself in the design of park buildings, new landscaping, and forestry management. (HRS 1989: 28)

Thomas C. Vint, a National Park Service landscape architect involved in the development of Acadia, best summed up Rockefeller's work on Mount Desert Island:
"Many people know how much Mr. Rockefeller has done for the Park in acquiring land and building roads, and bridges and structures for it. But I think there are few who realize the amount of personal time and study he had given to it. He actually developed the general plan for the present Park. His land acquisition was pointed toward definite objectives—a workable unit at a time, in which the boundaries were studied from the viewpoint that the need for land was to be established and then acquisition carried out to meet the objective. This often meant the inclusion of a number of expensive highly-developed properties as well as the large wooded areas that are the more obvious type of park acquisition. It might be more nearly correct to say that Mr. Rockefeller developed a plan for Mount Desert Island, for he gave as much thought to the appropriate limits of the towns as he did to the limits of the park lands. He was as earnest about keeping the Park from including undeveloped land that should be held for town purposes as he was willing to pay the price and have the patience to acquire and remove an expensive home that was an encroachment on the Park side of a well-studied boundary." (HRS 1989: 35, from Tilden 1951: 3)

Philosophy and Intent of the Carriage Roads:
Until his death in 1960, Rockefeller worked with island residents and the National Park Service to develop three separate circulation systems—the town roads, the park motor roads, and the carriage roads—all separated by grade crossings. Rockefeller envisioned the carriage roads as a complement to, not a substitute for, the island's motor roads, as well as a destination for those who enjoyed both the social and the sporting aspects of carriage driving. Anticipating that the sport of carriage driving would increase in popularity, Rockefeller took great care to ensure that

the carriage roads were designed to accommodate both large and small carriages. As such, the roads themselves were a generous width and slightly banked at curves, and the bridges were sufficiently high to allow for the passage of a coach. (HRS 1989: 36,318)

With his carriage road system, he planned access to what he regarded as some of the most beautiful views in the world and also to several of the island's important natural features. According to Thomas Vint, he accomplished this and much more:
"Mr. Rockefeller's knowledge of the Island was impressive. He seemed to know every contour, every tree and rock outcrop, and had a high regard for each item or natural bit of landscape peculiarity. He had been building roads for some years with his own road crews, giving seasonal employment to local people; expanding his program during years of unemployment and decreasing it during years of high employment. He used methods that required hand labor and less machinery, which permitted a tailor-made job, foot by foot adjustments being made as he went along. But he was patient with our Service methods. He understood perfectly that, using public funds, we had to work to plans and specifications on contracts awarded to the lowest bidder, and thus we could make few adjustments as we proceeded. And, too, few of our contractors had ever built park roads. I think he feels that under the circumstances we have accomplished acceptable results." (HRS 1989: 36,38, from Tilden 1951: 13)

In their 1989 "Historic Resource Study," William Rieley and Roxanne Brouse discuss that the proper utilization of park land was, and still is, a matter of debate between those who favor development of parks for public use and enjoyment, and those who favor preservation of the resource in its natural state. Historians John Harr and Peter Johnson wrote that Rockefeller's position in the conservation movement of the time was generally similar to that of Theodore Roosevelt and Gifford Pinchot, who promoted the protection of virgin lands through a best use policy that attempted to balance interests: "In aiding the development of tourist facilities and carriage roads at Acadia, [Rockefeller's] purpose was to bring the public in to enjoy the park under proper conditions that would preserve its beauty." Such categories, of course, were far from absolute, as Rockefeller bought several large tracts of land on the island to prevent them from being developed at all. (HRS 1989: 38, from Harr and Johnson 1988: 200)

Planning and Design of the Carriage Roads:
In the accepted standards of road design in parks in the early 1900s, nature was to be experienced unspoiled, and such obvious manmade interventions as roads were to be as unobtrusive in the landscape as possible. Landscape architects Henry Hubbard and Theodora Kimball elaborated on the park road experience in their 1927 book, "An Introduction to the Study of Landscape Design:"
"Theoretically at least the only wheeled traffic ... which should be allowed upon park roads is pleasure traffic, people proceeding at a leisurely rate to enjoy the fresh air and the beauties of the park....Such regulations will allow park roads to be made somewhat narrower and with somewhat sharper curves than they otherwise might be, thus materially lessening their conspicuousness and the damage which their grading may do to the natural ground surface." (HRS 1989: 39, citing Hubbard and Kimball 1927: 309)

Rockefeller subscribed to these views for his carriage roads, working closely with his engineers to align the carriage roads with Mount Desert Island's topography and to keep minimal the width of the road corridor so that trees could be saved. Therefore, although land clearing and road construction initially had a great impact, eventually the carriage roads became virtually invisible. (HRS 1989: 39)

The planning and design of Acadia's carriage roads aligned with a style of design called the Picturesque, which promoted an appreciation of the picturesque qualities of the natural environment and the use of natural materials in design to create a naturalistic appearance. Acadia's carriage roads subscribed to the Picturesque style by highlighting the island's dramatic scenery. The roads around Mount Desert's mountains were sited on the slopes to take advantage of the views, and except for the Day Mountain Summit Road never occupied hilltops, which was in keeping with the initial wishes of the Trustees that the summits remain unexploited. (HRS 1989: 39)

Acadia's carriage roads also adhered to the Picturesque style by utilizing native stone in its construction to blend the roads and their associated features into the landscape. Typical engineering features necessarily part of all roads—walls, drainage structures, and guardrails—were built with stone for durability and aesthetics. Walls of very large stones were built in either in cut to retain the original grade of the ground or in fill to retain new material on top of the original grade, to help minimize the width of the road corridor and to save the largest number of trees. Stone-lined waterways were installed to collect runoff from the roadway and surrounding slopes and directed it to culverts comprised of a pipe or a stone box. Culverts were placed at frequent intervals to prevent the concentration of runoff, and to interrupt the natural drainage pattern as little as possible. Culvert headwalls were built with stone to minimize their appearance and withstand freezing and thawing. But perhaps the most distinguishing feature of the carriage road system was the use of large stones as guardwalls. These coping stones were placed along the edges of the road that were on steep areas of fill or at the top of retaining walls. The stones were made readily available by the road building process and came to be known as "Rockefeller's teeth." (HRS 1989: 52,292-293)

The specific construction details for these features will be discussed in the "Analysis and Integrity" chapter. The development of the carriage road system's bridges, gatehouses, and views and vistas are discussed in more detail here because they best reflect the picturesque qualities and rustic character of the system.

Bridges:
Acadia's carriage road system included seventeen masonry arch bridges, all but one of which were designed by architects William Welles Bosworth and Charles Stoughton, both of whom had worked with Rockefeller previously. The bridges spanned streams and ravines, and served as overpasses or underpasses where carriage roads intersected with either park or town motor roads. In conjunction with his engineer-on-site, Rockefeller would first determine where bridges would be necessary or desirable along the roads. The engineer would then prepare a topographic survey and forward it to the architect working on the bridge, and Rockefeller would work with the architect to set the style and details of the bridge construction. The architect

followed through with plans and specifications, which included the necessary structural engineering. With plans in hand, the engineer laid out the bridge and supervised the construction (Figures 2-5). The architect also made periodic inspections of the work as it was underway, as did Rockefeller. (HRS 1989: 55)

The designs of the carriage road bridges at Acadia reflected the prevailing philosophies of bridge design. An influential text in the early 1900s was Henry G. Tyrell's Artistic Bridge Design. Tyrell outlined five criteria for beautiful bridges appropriate to their settings. His first rule was that bridges should conform to their environments: "In a wild mountain gorge large spans of bold design without applied ornament are the most appropriate, while in wooded parks a rustic bridge fits better into the landscape." He was such an advocate of this point of view that he recommended photographing the site and designing the bridge separately but at the same scale, and then superimposing the design over the photograph to determine the appropriateness of the design for the site. (HRS 1989: 51,53, citing Tyrell 1912: 20)

Tyrell's second criterion was the economic use of material: "...beauty exists in every structure which is designed according to the principles of economy, with the greatest simplicity, the fewest members and the most pleasing outline consistent with construction...Strength and economy are the controlling motives, but art, though secondary, must not be neglected." Thirdly, he recommended that the construction of the bridge be revealed in its appearance. In other words, girders should not be bent to form arches, and "…false members in trusses should be avoided or used with caution." The fourth criterion stated that to be beautiful, the primary form or outline of a bridge and its relative proportions were to be "...well and properly chosen. A spectator is more impressed by the general form than by an endless wealth of detail, and when the outline is correct, little detail ornament is needed." He added later, however, that small bridges need finer outlines and more detail than larger bridges. Lastly, Tyrell recommended that bridges be ornamented, but not overly so, stating that "...superfluous decoration has a minifying effect and is sometimes ridiculous." (HRS 1989: 51,53, citing Tyrell 1912: 21,23)

Hubbard and Kimball elaborated on these principles, citing Tyrell as a reference thirteen years later when they wrote their textbook on landscape design. They agreed that, despite the strength of concrete and steel construction, the forms of bridges "…should not only be actually sufficient for structural stability, but should appear to be so…A proportion should be preserved between the apparent strength of the parts and the work which they are doing." They also added that bridges should reflect their use:
"...A bridge, therefore, should be in scale both with the road or path which it carries and with the water, or possibly a ravine or another road, which it crosses...A very elaborate triumphal bridge carrying an unimportant footpath is likely to appear as absurd as a great stone arch carrying a highway over an insignificant rivulet." (HRS 1989: 53, citing Hubbard and Kimball 1927: 216-217)

In 1938, a National Park Service publication reflected the evolution of these principles as they were applied in the national parks. The author, Albert Good, reiterated that overemphasizing a bridge's structural elements was important in maintaining a good scale relationship with the

surroundings, particularly in the "…more or less rugged landscapes widely prevailing in park areas." The materials of choice for bridges in national parks were not concrete or steel, which were seen as more appropriate in urban settings, but locally-obtained stone and wood:
"…It is particularly important to stone bridges, which in their most happily successful expressions seem almost to spring from the stream or river bank when truly related in color, texture, and scale to adjacent rock outcrops." (HRS 1989: 53-54, citing Good 1938: 175)

Even the style of stone masonry construction selected for bridges was to reflect the area's natural formations. Good recommended avoiding "slickness" of masonry, stating "rugged and informal simplicity in use is the indisputable specification for their proper enjoyment." Nevertheless, he didn't recommend complete abandon in stone masonry construction:
"...Shapeless stones laid up in the manner of mosaic are abhorrent in the extreme, having no precedent in Nature or in the traditions of sound masonry. In bridges particularly there is merit in pronounced horizontal coursing, breaking of vertical joints, variety of size in stones—all the principles of sound construction and pleasing appearance in any use of masonry." (HRS 1989: 54, citing Good 1938: 176)

Good's book also noted that most national parks comprised hundreds of acres of land with numerous opportunities for bridge construction. As a result, variety in bridge design, within reason, became a goal in national park bridge design:
"...The ranges of use, span, and height, and the broad fields of materials, arch and truss forms, local practices (to name a few variety-making possibilities) promise endless combinations and cross combinations making for much individuality among bridges." (HRS 1989: 54, citing Good 1938: 175)

Rockefeller had already built eight of the carriage road system's seventeen bridges when Hubbard and Kimball's book was published in 1927, and had finished building all but one of the bridges when the National Park Service's guidelines were complete in 1938. However, many of these principles were reflected in the bridges as they were designed and constructed. For example, all were built with native stone and most in the pattern of stone masonry style described by Good. Many also appear to spring from the bedrock around them, at times incorporating the rock into abutment walls. In addition, all but one are constructed of concrete and steel and faced with stone. As Good recommended, they were "...functionally adequate with the exact knowledge of the engineer..." while also looking structurally stable to the "...inexact instincts of the layman." (HRS 1989: 54-55, citing Good 1938: 175)

Acadia's carriage road system also included twelve smaller steel-stinger bridges with wood decks and railings. In the spirit of the recommendations of Hubbard, Kimball, and Good, Rockefeller felt these rustic bridges, which spanned smaller streams, were a more appropriate design choice at these locations than larger masonry bridges. Their designs were similar to a "country bridge" first developed for Rockefeller at his Pocantico Hills estate.

Gatehouses:
In 1929, Rockefeller enlisted the Olmsted Brothers, a landscape architectural firm based in Brookline, Massachusetts, to prepare a comprehensive report on Rockefeller's proposed motor

road expansion as designed by the Kidde Construction Company in 1929. As part of this review, Frederick Law Olmsted, Jr.'s also commented on the carriage roads. Historian Richard Quin writes that Olmsted's conception for the roads was the same as Rockefeller's; that the carriage roads should have the appearance of the old woods roads of the island and be "untraversed by motor vehicles." Olmsted felt that some of Rockefeller's older carriage roads had "attained or closely approximated this ideal," but others had fallen short in part due to the obvious and unauthorized use of the roads by cars that had rutted the roadway surfaces. Olmsted believed that to sustain the "woods road" look, all motorized vehicles would have to be banned by blocking the entrances, either with some type of barrier that could allow carriages but not cars to pass, or by a manned gate structure that would likely be a costlier endeavor. Rockefeller would choose the latter option. (CLR 2007: 32; HAER 1997: 45-46, citing Report, Olmsted to Rockefeller, 11 July 1930; http://www.nationalparkstraveler.com/2011/01/gate-lodges-acadia-national-park)

Three gatehouses were planned for Acadia's carriage road system, but only two—Brown Mountain and Jordan Pond—were built. Historically, a gate lodge served two purposes. First, it was located at entrances to estates and functioned to welcome visitors to the grounds or "park." In the eighteenth century, the idea of the outdoors as a threatening place gave way to a more romantic view of nature. This led to a shift from small formal gardens nestled closed to the house, to a landscape that encompassed lands surrounding the house. As this view developed, a naturalistic style of landscape design extended into the whole estate beyond the country house. Entrances and gate lodges were placed at remote ends of the estates so that approaching guests could take in the views. Second, the gate lodge served as working class housing for the gate keeper and his family. Rieley and Brouse write that "it was a pretentious building with a humble function. In other words, it housed a working class family in a structure that also served as a symbol of the owner's wealth, power, and taste." (HRS 1989: 55)

The Brown Mountain and Jordan Pond gatehouses are 1930s examples of gate lodge architecture (Figure 6). Like their estate counterparts, they served the dual purposes of providing entrances to the carriage roads while also providing housing for the gatekeepers. When Rockefeller began thinking about a style of architecture for Acadia National Park, he funded a tour of western parks for prominent New York architect Grosvenor Atterbury in 1929 to find an appropriate building type. Since Acadia was still the only national park east of the Mississippi River at the time, the western parks (e.g., Yellowstone, Yosemite, etc.) were the only source of models. Atterbury, who had worked previously with Rockefeller and eventually designed both of Acadia's gatehouses, set down his findings in a report in 1929, which included valuable information about the early history of these western parks and also a clear statement of principles regarding architectural styles appropriate in a park setting. Atterbury subscribed to the view that man's intervention "…should not intrude on the experience of nature:" "However you derive it theoretically and stylistically, any Architecture in our National Parks is bound to be, in fact, the physical point of contact, comparison and contrast between the latest handiwork of human civilization and the oldest untouched monuments of Nature." (HRS 1989: 56, citing Atterbury 1929: 1)

Atterbury encountered several architectural characteristics on his travels that he included in the

design of both gatehouses. He recommended, for instance, the use of high-pitched roofs because they were picturesque and because they functioned to keep snow off the roofs. He also advocated that the color of the buildings harmonize, not contrast, with their surroundings. Upon returning from his western tour, and before he began study drawings for Acadia's buildings, Atterbury travelled to Mount Desert Island. He later wrote Rockefeller: "...Although I thought I knew Mount Desert Island pretty well, I was astonished at the great beauty and variety that your work in the parks has brought out and made available for everyone to rejoice in. It is absolutely sui generis [unique] and is not comparable in any way with the other National Parks but, of its kind, equally beautiful." (HRS 1989: 57-58, citing Letter, Atterbury to Rockefeller, 15 May 1930)

After discussions with Atterbury and with Director Horace Albright and Assistant Director Arno Cammerer of the National Park Service, Rockefeller decided to build both gatehouses in a revival style inspired by the architecture of the French Romanesque period, particularly the local style found in the Le Puis district of France. Rockefeller and Atterbury chose the French Norman Revival style for its picturesque quality and to be in keeping with the French heritage of the Acadia area. Superintendent Dorr found it particularly appropriate because it was the region from which Sieur de Monts had come. (HRS 1989: 58)

The design process for the lodges was much the same as that for the bridges and roads. Rockefeller worked with Atterbury to develop the design and with Paul Simpson to establish the location. Simpson then prepared topographic surveys and mapped utility locations for Atterbury. Throughout the design and construction, the two worked closely on modifications related to the utilities. Simpson supervised the construction, and Atterbury made periodic inspections. (HRS 1989: 58)

Eagle Lake Lodge.
As early as 1922, Superintendent Dorr and Rockefeller has discussed the importance of developing a "…center where horses may be secured at reasonable prices." The west side of Eagle Lake was envisioned as a possible location, and between 1924 and 1929 carriage roads encircling Eagle Lake were constructed, but the project went no further until Atterbury's 1929 western tour. By the fall of 1930 Atterbury had completed working drawings for a massive 400-foot long building, which in addition to stables included a tea house (Figure 7). The building's design style was similar to that of the other two gatehouses, and work on the lodge went as far as staking its location on the ground on property owned by Rockefeller. However, the building was never constructed because of political issues related to the sewage disposal system and its possible impact on Eagle Lake (which served as a town water supply). (HRS 1989: 197, 199-200, citing Letter, Rockefeller to Dorr, 14 August 1922)

Gates.
A reference from 1929 indicates there was a wooden gate supported by stone piers at the Jordan Pond end of the Asticou-Jordan Pond Road entrance, as well as simpler functional gates at other locations to control access. Research for this CLI also discovered a drawing from 1937 for a "standard carriage road gate" apparently independent of the lodges described above. Notes on the drawing indicate the project was completed in April 1937, but it is unclear where it

was located. The gate structure was constructed with cedar timbers and supported by granite posts, and included a smaller gate for pedestrians. (HRS 1989: 196; Denver Service Center, eTIC, Drawing 123-8100 [id26773]).

Views, Vistas, and Plantings:
In making the carriage roads accessible to scenic destinations, Rockefeller skillfully applied his inherited interest in framing favorable views. Rockefeller and the Simpsons carefully studied the topography and vegetation and aligned the roads to provide important distant views, views of the island that the roads were meant to connect, and views of structures such as the bridges. It was noted landscape architect Beatrix Farrand, however, who refined their vision as she travelled again and again over the carriage roads making notes on planting recommendations. (HRS 1989: 58)

The niece of Edith Wharton and the wife of educator Max Farrand, Beatrix Farrand was a longtime resident of Mount Desert Island, her estate "Reef Point" being located in Bar Harbor. When she worked as a consultant for the carriage roads, she was already a well-established and respected professional landscape architect. Farrand began working with the Rockefellers, primarily Mrs. Rockefeller, on their gardens at The Eyrie. From that association grew a working relationship with Rockefeller which generated correspondence spanning a period of thirteen years (1928-1941). Throughout that time, he sought her advice regarding planting, vista clearing, grading, and drainage along the whole length of the carriage road system; the construction of the bridges; and the grading and planting design for both gatehouses. For this work she refused to charge a fee until Rockefeller pressed her in 1934 to accept a modest payment to at least defray her expenses. That he was grateful for her help is evident in his letters to her. A typical one included:
"I have driven and ridden a number of times since reaching Seal Harbor. This is just a note to tell you how pleased I am with the planting in so far as I have seen it. You cannot know what a relief it is to me to have you giving attention to these matters for it had become quite a burden to me to try to keep up with them on all the roads. Then, too, what you do is so much better done than anything I could do. Please accept this renewed assurance of my deep gratitude to you for the very real service you are rendering to the National Park and also to me." (HRS 1989: 60, citing Letter, Rockefeller to Farrand, 21 July 1931)

It was from 1928 through 1935 that Farrand worked most intensely on the carriage roads. She would travel with Charles Miller (the Rockefellers' nurseryman) over the roads, discussing plans with him and making notes on her recommendations. Rieley and Brouse write that these notes, which were transcribed and delivered to Rockefeller for his review and approval, are valuable in two major respects. First, they describe in detail her planting design, particularly important because most of this planting would later be destroyed in a fire that swept across much of Mount Desert Island in 1947. Second, they include information about views, drainage patterns, the grading of the banks along the road, and other random thoughts. As examples, her notes from November 1930 included a reference to the fact that the area north of Eagle Lake could not be planted with trees because it was a winter landing place for airplanes; and from November 1934, she wrote that, "Five deer were noticed in the course of the drive." (HRS 1989: 60, citing Letters, Farrand to Rockefeller, 4 November 1930 and 11 November 1934)

Rieley and Brouse's report described five ways in which Farrand used plants along the carriage roads:
1) to enhance and frame distant views of the mountains or sea, and near views of the bridges or features such as the Witch Hole or Gilmore Meadow;
2) to enhance the roadsides and the experience of travelling the carriage roads;
3) to screen objectionable views such as quarry sites or adjacent motor roads;
4) to reforest denuded slopes or scars made by road construction, or block access to old roadways, and;
5) to create natural plant associations appropriate to their landscape setting. (HRS 1989: 61)

Farrand's planting recommendations were carefully designed to develop the sequence of views planned for those travelling the roads. In her work to enhance distant views, she was primarily interested in removing vegetation that was currently or could eventually be an obstruction. For example, on one excursion with Miller in 1934 she noted "...a good many places where a very small amount of cutting would keep open certain vistas created one or two years ago." She was particularly concerned about the "admirably cut vistas" looking over Frenchman Bay from Paradise Hill and recommended that they not be impeded by any high planting. Specifically, she noted that poplar sprouts needed to be removed from the southeast bay view as seen from Paradise Hill; oaks and birches (with the exception of a good young oak) should be taken out of the northeast view from Paradise Hill; and birch sprouts around the north loop and sprouts obstructing the vistas as seen from the west side of the loop should be removed. (HRS 1989: 61,65, citing Letter, Farrand to Rockefeller, 4 November 1930)

In addition to removing obstructions, she took care to plan the foreground of her views, much as Atterbury described in his report on his western trip. Her notes also included this recommendation: "As a good foreground to the bay view, use heavy groups of wild roses and Diervilla and Sweet Fern. These will never grow high enough to interfere with the prospect but will make an attractive and clean foreground." (HRS 1989: 65, citing Letter, Farrand to Rockefeller, 4 November 1930)

During this time, standards of landscape design emphatically advocated providing appropriate settings for buildings and structures in a landscape, such as a bridge. An important rule was to draw the traveler's attention to it. That Farrand tried to build on that principle is evident from this recommendation: "Add one or two pines to the north end of Duck Brook Bridge and a mass of viburnum cassanoides. Plant trees on each side of bridge abutments leaving a view of the arches free. Perhaps later on diervilla, wild roses, and sweet fern may replace the untidy grass patches (Figure 8)." (HRS 1989: 65, citing Letter, Farrand to Rockefeller, 4 November 1930)

In addition to providing views of the Rockefeller's bridges, Farrand valued views of the island's natural features and took care to ensure that nothing of interest would escape the attention of those enjoying a ride in a carriage. On one particular outing, she determined that sprouts were obscuring the first view of Witch Hole Pond as seen from the carriage road on the approach from the southeast and therefore recommended their removal. She added that much cutting

needed to be done on the northeast side of Witch Hole to preserve some pond views. A little farther down the road, she noted that sprouts needed to be removed to open up views of the marsh in at least two places. (HRS 1989: 65, citing Letter, Farrand to Rockefeller, 11 November 1934)

In areas where the views were limited or there was no bridge or natural feature to attract attention, Farrand used plants to create interest. At carriage road intersections, she planted the triangular spaces created by the intersecting roads with new trees so they would eventually look like the surrounding woodlands. In another example, from November 4, 1930:
"Instead of keeping the edges of the roads fairly evenly planted with continuous lines of trees, keep occasional spots open in which clumps of shrubs may be set out. This suggestion is made in order to try to vary the road planting in height and quality and type of material." (HRS 1989: 65,67, citing Letter, Farrand to Rockefeller, 4 November 1930)

Farrand's notes also include reference to plantings done by Miller that were purely ornamental in nature. Miller had planted white boneset in meadows, blue pickerel weed in ponds, scarlet lobelia on pond edges, and white elders at the forest edge. She records:
"It was thought that these, with witchhazel, would make a fine display and would be likely to thrive in this soil and exposures and that the witchhazels with their late autumn blossoms would be an attractive feature." (HRS 1989: 67, citing Letter, Farrand to Rockefeller, April 1931)

The necessity of screening, particularly of quarry sites and adjacent roadways, also played an important role in the planting design. Similarly, old roads and construction roads needed to be closed by planting, and areas denuded by construction needed to be reforested. Farrand spoke of this as "healing with plants," and in general recommended that, "...the more thickly the old roads and scars of roads are planted...the better the effect will be." Daniel Hull, a landscape architect with the National Park Service visiting the park in 1926, approved of her recommendations as implemented by Mr. Miller:
"... The work of reforesting the scarred slopes is being carried out under Mr. Miller's guidance, and it is not difficult to see that only a short time will be required to remove such scars as have resulted from the construction work." (HRS 1989: 67, citing Letters, Farrand to Rockefeller, 4 November 1930, and Hull to Cammerer, 3 December 1926)

In all of her planting work, including ideas for the gate lodges, Farrand worked primarily with native plants. Although she did use some exotic species, she consistently worked to develop natural plant associations. In other words, Farrand planted shrubs in masses or clumps if that was the way they naturally grew, and she planted them in environments (e.g., wet areas, banks, etc.) where they would thrive. Rieley and Brouse comment that Farrand was fortunate in her work on Mount Desert Island to have a large selection of plants from which to choose; despite its northern location, its situation off the coast puts the island in a climate zone similar to that of southern Pennsylvania. (HRS 1989: 67)

Roadside Clearing.
An important element of all of Rockefeller's road-building involved roadside cleaning and grading. Early road builders typically showed little concern for the roadside appearance, often

leaving steep, uneven cut and fill sections adjacent to the road bed. Trees that were cut and damaged in the construction process were left to decay at the margins of the road. Rockefeller felt strongly that the roadsides and adjacent woodlands should be groomed to a clean and manicured appearance. In a letter to Superintendent Dorr in 1919 concerning the cost of construction of the carriage roads, Rockefeller said of the roadside cleaning:
"…I am paying…the very substantial cost of the extensive forestry work and clearing of dead timber, down and standing, which I always do, not only along both sides of a road but as far back as the eye can see into the woods…" (Guidelines 1989: 61, citing Letter, Rockefeller to Dorr, 19 November 1919)

Rockefeller justified his position on a trip to Yellowstone National Park in 1924, where he observed debris from construction left along roadsides. When the park's superintendent Horace Albright explained there was no money to clean it up, Rockefeller offered to fund a demonstration project. Albright completed the project and met the budget, to which Rockefeller responded:
"…The interest which your office and your employees are taking in this road-cleaning work only goes to show that even the untrained eye likes the beautiful and the orderly better than the ugly and the untidy, when an opportunity to compare the two is given." (HRS 1989: 50, citing Letter, Rockefeller to Albright, 11 November 1924)

This was consistent with Rockefeller's aesthetic judgment and his personal demeanor. Charles E. Peterson, a landscape architect with the National Park Service, recalled Rockefeller's reputation among park personnel during the early 1930s:
"...He was a very neat person. They said he had a whole team of German foresters, and that after a storm they would rush out and pick up every stick." Over a period of fifty years, Rockefeller spent many thousands of dollars cleaning the woodlands adjacent to his roads of fallen or decaying trees, "...as far back as the eye can see into the woods..." (HRS 1989: 50, Interview with Rieley and Brouse, 15 April 1988, and Letter, Rockefeller to Dorr, 19 November 1919)

Signs:
In the final stages of construction of the carriage road system in the 1930s, Rockefeller and his engineer, Paul Simpson, turned their attention to some of the finishing details, such as signage. Simpson worked with Benjamin Breeze, the park's resident landscape architect, to develop a system of sign posts to direct travelers at various intersections. Signboards were hung from wood arms attached to the sign posts and supported by chains (Figure 9). The arms from which the signs were hung indicated the direction of travel. Some signs were located in the triangles, or islands in the center of intersections, while others were located to the side. The signs were fabricated and installed around 1938 by the Civilian Conservation Corps, one of President Roosevelt's New Deal programs initiated in response to the Great Depression. It should be noted that at this time, the carriage road intersections had not yet been assigned numbers. (HRS 1989: 240)

Figure 1. The John D. Rockefellers, 1915. (Library of Congress, http://en.wikipedia.org/wiki/File:Rockefellers.png)

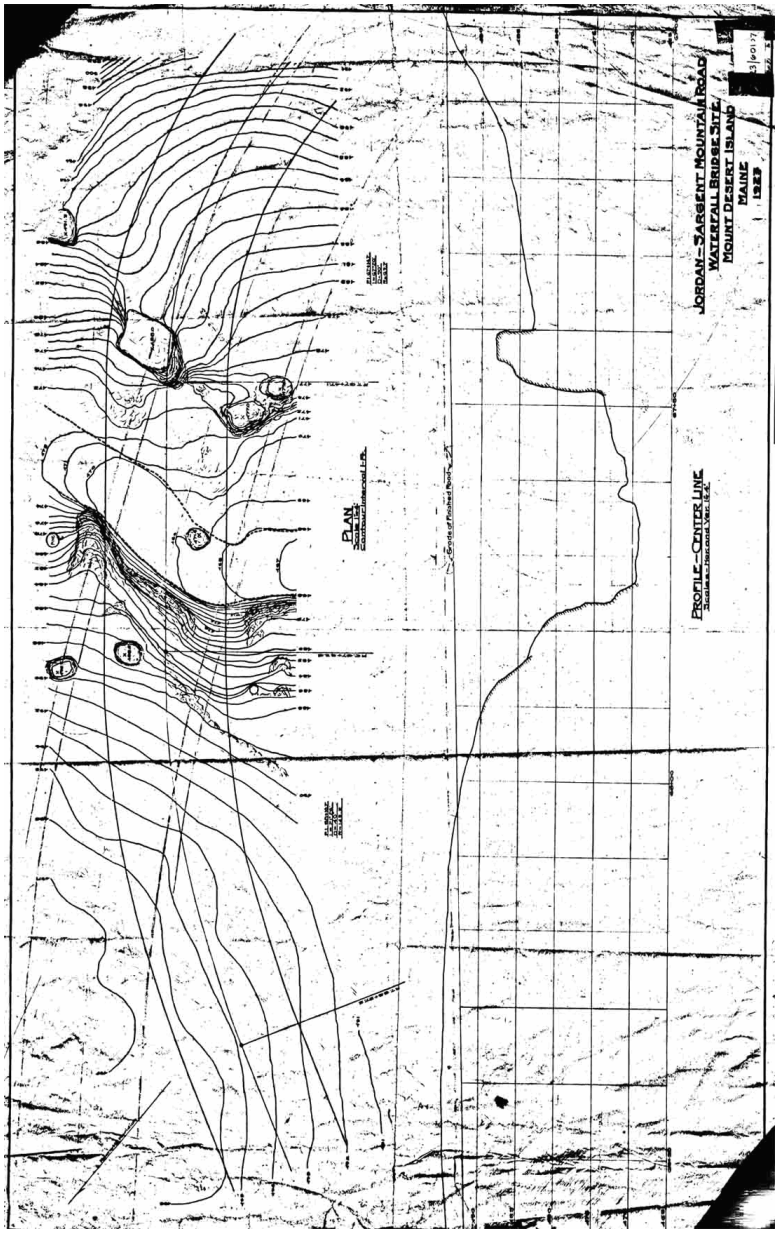


Figure 2. Plan of the Waterfall Bridge site, 1923. (Denver Service Center, eTIC, ACAD_123_60107_[id26365])

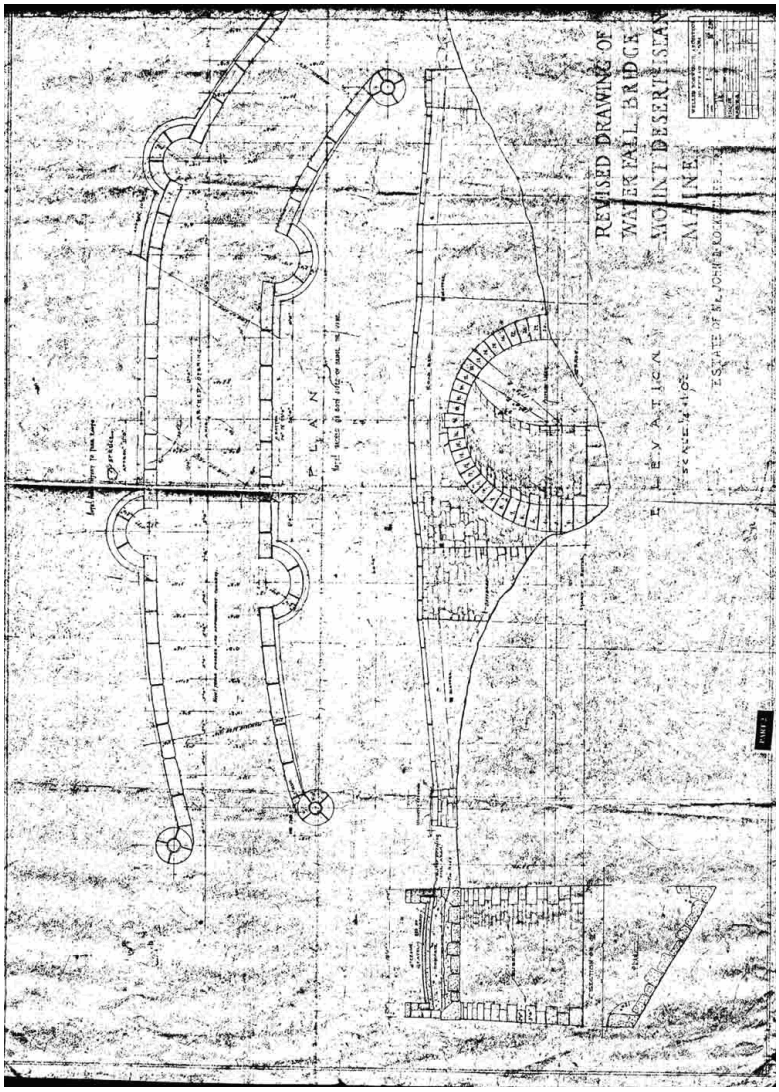


Figure 3. Revised drawing of the Waterfall Bridge by William Bosworth, 1924. (Denver Service Center, eTIC, ACAD_123_60106B_[id56385])

Figure 4. The Waterfall Bridge under construction. Note the wood guides for the stonework on the left. (Mr. and Mrs. Charles P. Simpson Collection, from Historic Resource Study 1989:138)

Figure 5. The completed Waterfall Bridge, c.1926. (Mr. and Mrs. Charles P. Simpson Collection, from Historic Resource Study 1989:139)

Figure 6. View looking east at the Jordan Pond Gatehouse in 1934. (C.P. Simpson personal collection, from Roberts 2012: 165)

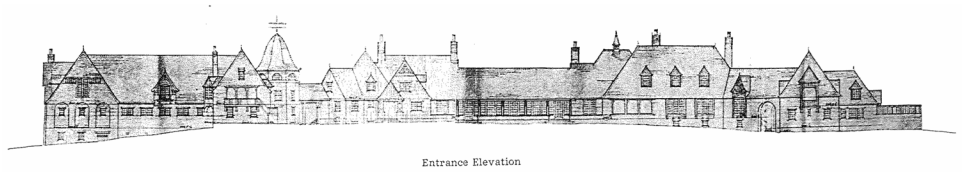


Figure 7. Elevation drawing of the Eagle Lake Lodge by Grosvenor Atterbury, c.1930 (Rockefeller Archives Center, from Historic Resource Study 1989:199)

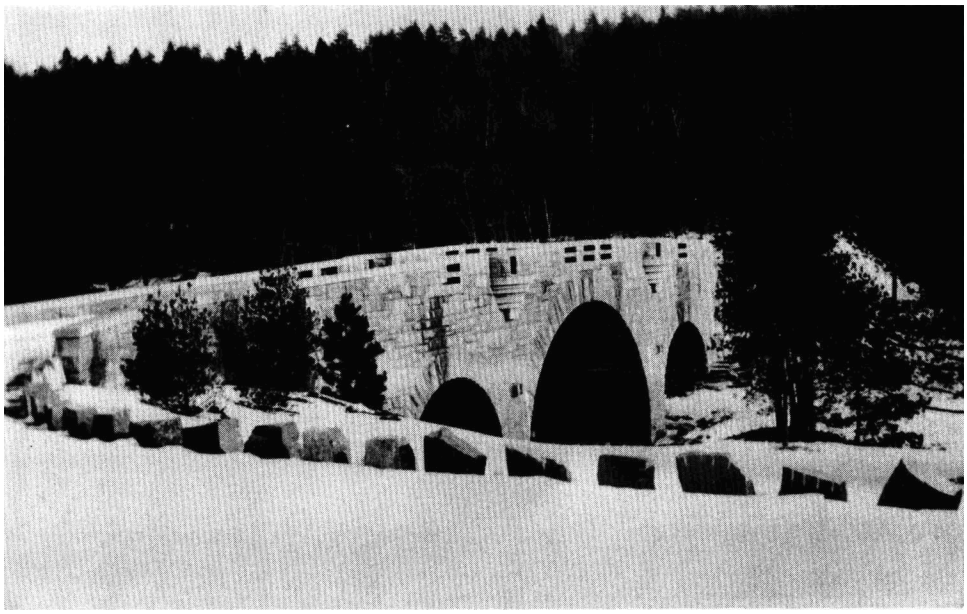


Figure 8. View likely from the 1930s looking east at the Duck Brook Bridge, completed in 1929, showing Beatrix Farrand's planting recommendations. (Mr. and Mrs. Charles P. Simpson Collection, from Historic Resource Study 1989:66)

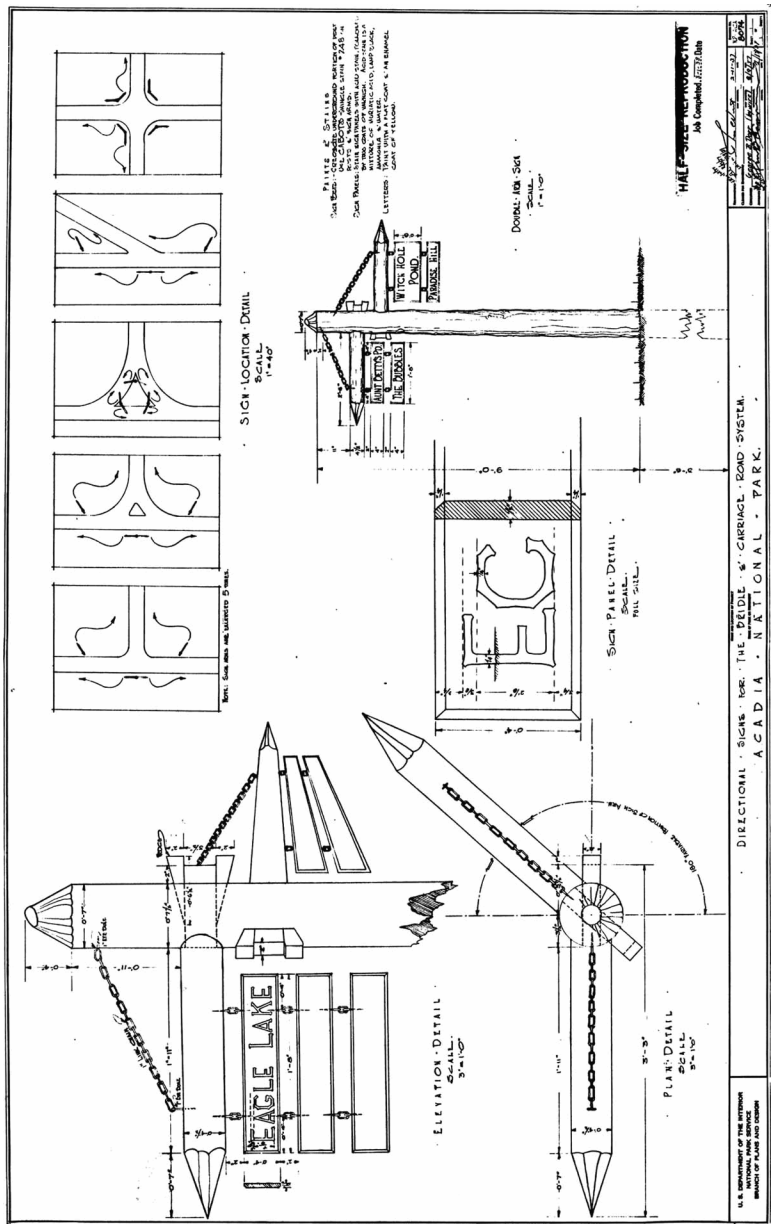


Figure 9. Drawing of the carriage road sign posts by Benjamin Breeze, 1938. (Denver Service Center, eTIC, ACAD_123_8074_[id26746])

DEVELOPMENT OF THE HISTORIC CARRIAGE ROAD SYSTEM (PART 2), 1913-1940

Sequence of Planning:
Rockefeller and his engineers—Charles P. Simpson, his son Paul D. Simpson (after 1928), and Walters G. Hill—established procedures for design early on that remained virtually unchanged during the 27-year construction of Acadia's carriage roads. In the "Historic Resource Study," Rieley and Brouse used a complete set of construction documents for Aunt Betty's Pond

Carriage Road, built in the early 1930s, to outline how a carriage road was typically planned. By this time, the planning process had been in place for nearly 20 years and the development of the construction documents proceeded routinely. (HRS 1989: 43)

Aunt Betty Pond was one of the features Rockefeller desired to make accessible to the public. After Rockefeller selected an initial route, Paul Simpson initiated a reconnaissance survey so that he could study the lay of the land and note where culverts would be necessary, where rock would need to be removed, or where fill material would be available (Figure 10). In addition to recording this on paper, survey points were set in the field (some of which are still visible) that could be used later to establish the centerline during the final layout. Information from the survey was then used to determine the location of the road in plan (horizontal dimensions) so that it fit the topography as necessary aesthetically with proper circular curvature, and in profile (vertical dimensions) to make certain that the grades were not too steep or too sharp for carriages. Simpson would then calculate the latitudes and departures (numbers which allow for accurate location by grid coordinates) in preparation for the final layout (Figure 11). (HRS 1989: 43)

If the work was to be executed within the park's boundary, the next stage of production involved communication with the National Park Service. Drawings were sent for review, which included notations on the roads already built and the lengths of segments planned (Figures 12-13). Simpson would then stake the planned alignment and Rockefeller would "walk it" on his next trip and recommend adjustments if needed. With the road plans thus approved, Simpson would prepare a construction plan and profile drawings for every segment of road. Upon the completion of the specifications, the road was ready for construction (Figure 14). (HRS 1989: 47)

Sequence of Construction:
Thorough chronological narratives regarding the sequence of the carriage road construction can be found in the Historic Resource Study as well as the 1997 report, "Rockefeller Carriage Roads (Acadia Carriage Roads), HAER No. ME-13" by Richard Quin, and the 2012 book, "Mr. Rockefeller's Roads: The Story Behind Acadia's Carriage Roads, 2nd Ed.," by Ann Rockefeller Roberts. These sources, and others, vary widely on the dates of construction and the names of various road segments, mainly because the system in its early years was built in non-continuous fragments due to the island's topographic conditions and land ownership issues. It was not until the 1930s that some of the more isolated segments were connected by new carriage roads and incorporated into larger loops.

The following list outlines the construction dates of Acadia's carriage roads based on research for this CLI, and includes the current road section intersection numbers. Road sections indicated in italics are outside of the current park boundaries. The list is followed by a brief historical summary for each carriage road.

--1913-1916: Bar Hill Roads, [28-27] [26-27] [25-26] [27-31]
--1913-1916: Barr Hill Extension, [24-28]
--1916: Gardiner-Mitchell Hill-Jordan Stream Road, [34-33] [33-32] and others, no intersection

numbers
--1917: Gardiner-Mitchell Hill-Jordan Stream Road, [23-25] [25-16] [32-22 part] [32-24 part] [24-23]
--1918: Jordan Stream Path: [15-23]
--1918-1919: Little Harbor Brook Road, [20-22]
--1918-1920: Asticou-Jordan Pond Road (portions), [Rte.198-18] [18-19] [20-19] [16-15] [14-15]
--1919: Redfield Hill Road, [31-30] [30-29] [29-25]
--1922-1928: Jordan-Sargent Mountain Road, [10s-14] [12-10n] [19-12] [8-10s] [13-12]
--1922-1926: Hadlock Brook Bridle Path, [13-18]
--1924-1926: Eagle Lake Road (West), [9-8]
--1927-1929: Eagle Lake Road (East), [6-7] [6-9]
--1927-1929: Hulls Cove Road, [6-4] [5-3] [4-5] [4-2] [2-3]
--1927-1929: Paradise Hill Loop Road, [1-2] [3-1]
--1928-1930: Bubble Pond Road, [16-17] [17-7] [7-8]
--1929: Duck Brook Bridge, [5-DBR]
--1930-1932: Amphitheatre Road (Asticou-Jordan Pond Road), [21-20] [21-14] [21-22]
--1930-1934: Aunt Betty Pond Road, [9-11] [10n-11] [11-13]
--1930-1934: Barr Hill-Day Mountain Road, [30-38] [38-37]
--1935-1940: Day Mountain Loop Road, [17-36] [36-38]
--1935-1940: Day Mountain Summit Road, [36-39]
--1940: Triad-Day Mountain Bridge, [17-37]

Barr Hill Roads, 1913-1916.
The first carriage roads were constructed around The Eyrie, Rockefeller's Seal Harbor home on Barr Hill, in 1913. These roads were very similar to the types of estate drives that Rockefeller and his father built at Pocantico Hills. The builders were Alanson E. Clement and Chauncey D. Joy, who had built earlier roads on the island and continued to build roads and bridges for Rockefeller for many years. (HRS 1989: 68-72)

The Carriage Road Plan, 1915.
By 1915, Rockefeller had conceived of a plan of carriage roads and bridle paths that was far more extensive, and public, than the road systems at Forest Hill or Pocantico Hills. As hand drawn on a 1913 Path Map of Mount Desert Island, the roads extended north from The Eyrie to the Jordan Pond House, and connected Jordan Pond to the Brown Mountain Road via the Amphitheatre Valley (Figure 15). Some of the proposed roads crossed into lands held by the Trustees, and in 1915 Rockefeller received permission to build those roads. These carriage roads were referred to as the Gardiner-Mitchell Hill-Jordan Stream Road, Jordan Stream Bridle Path, Asticou-Jordan Pond Road, and Redfield Hill Road. (HRS 1989: 72-75)

Gardiner-Mitchell Hill-Jordan Stream Road, 1916-1917.
Although he had received permission to build on Trustees land, Rockefeller focused first on building carriage roads on his own property, beginning with the Gardiner-Mitchell Hill-Jordan Stream Road. In 1916, he directed Clement to rebuild some of the old farm roads on the tract of land across Long Pond from The Eyrie on the Gardiner property, which Rockefeller had

recently purchased. The remaining portions were completed in 1917, extending north from Gardiner to Mitchell Hill, east to Squirrel Brook and across Jordan Stream, and ending at a gate on the public road near the Jordan Pond House. (Note: CR 23-25 and CR 25-16 are part of this road, and represent the oldest sections of carriage road currently on park property.) The 1917 sections were built by Clement and Joy and designed by civil engineer Charles P. Simpson, who had considerable experience and knowledge of the island. The Gardiner to Mitchell Hill portion of the road in particular became the standard for which future carriage roads would be constructed. Rockefeller also hired noted New York architect William Welles Bosworth to design a road crossing over Jordan Stream, which resulted in the Cobblestone Bridge, in 1917. Bosworth was a close friend of Rockefeller and had worked with him on several previous occasions. (HRS 1989: 77-81)

Jordan Stream Bridle Path, 1918.
The Jordan Stream Bridle Path was built in 1918 on the west side of Jordan Stream, and was the first construction done on land owned by the Trustees under the 1915 agreement. The path crossed the stream several times on wood bridges, and with a 12-foot width, was narrower than the carriage roads. The south end connected to the Gardiner-Mitchell Hill-Jordan Stream Road, and the northern end may have terminated near the Jordan Pond dam. (HRS 1989: 85)

Asticou-Jordan Pond Road (portion) and Little Harbor Brook Road, 1918-1920.
In 1918, Rockefeller turned his attention to the Asticou-Jordan Pond Road project, which would connect the village of Asticou near Northeast Harbor and the Jordan Pond House, via a scenic valley called "The Amphitheatre." As most of the proposed road was located on lands that were now part of the national monument, Rockefeller confirmed with Superintendent Dorr and Secretary of the Interior Franklin Lane that the previous permissions granted by the Trustees would be upheld by the federal government. He was also pleased to learn that motorized vehicles would be prohibited from using any of the carriage roads. (HRS 1989: 85-108)

However, due to the scarcity of labor and high labor costs caused by World War I, Rockefeller began building only the western portion of this road, and as such made a new proposal for a short road that would connect the western section of this road to his recently completed Gardiner-Mitchell Hill-Jordan Stream Road (Figure 16). The new broken-stone or "rock-filled" section was called Little Harbor Brook Road and was 16 feet wide, except for a quarter-mile portion that was built as a narrower 10-foot wide bridle path in order to "spare the greatest number of trees." In the fall of 1918 Clement began construction at the Gardiner end while Joy began on the Asticou end, both finishing in 1919. William Bosworth designed a small stone masonry bridge over Little Harbor Brook that was inspired by a bridge in Central Park, and it was completed in 1919 by local contractors Byron and Samuel Candage, Rockefeller's neighbors who had done extensive masonry work at The Eyrie. (HRS 1989: 85-108)

Clement was also working on a new road that went as far as the Jordan Pond dam, and presumably connected to the Gardiner-Mitchell Hill-Jordan Stream Road and the Jordan Stream Bridle Path. Rockefeller called this section the east end of the Asticou-Jordan Pond Road. This project required the construction of a bridge crossing over Jordan Stream, next to the dam at Jordan Pond. Rockefeller directed Candage to use the same design as that of the Little

Harbor Brook Bridge. The bridge was completed in 1920, although the stone work was more uniformly sized and finished than the other bridge. Around this time, Rockefeller installed a wooden gate supported by stone piers at the Jordan Pond Road entrance. They were designed by architect Duncan Candler, who had done remodeling work at The Eyrie. (HRS 1989: 108-110,196)

Up to this point, Rockefeller's carriage roads were admired by many summer residents, such as Charles Eliot who remarked that the roads built thus far were "a great asset" and will "protect the natural beauty and quiet enjoyments of Mount Desert against destruction by the rushing automobiles." There were also detractors, however, like Senator George Wharton Pepper who felt the roads marred the island's natural beauty. Pepper and others were particularly opposed to the portion of the Asticou-Jordan Pond Road passing through the Amphitheatre. Bowing to these pressures (as well as because of the labor-related issues) Rockefeller abandoned the Amphitheatre portion of the project in 1920 (for the time being). (HRS 1989: 115-116, citing Letter, Eliot to Rockefeller, 2 October 1919)

First Major Expansion of Carriage Road Plan, 1921.
In 1921, with World War I ended, road construction costs in decline, and his own personal wealth larger, Rockefeller began planning for an even greater expansion of the carriage road system than he envisioned in 1915 and 1918. His plan, which was approved by Superintendent Dorr and the National Park Service, was divided into four projects:
-- Project A: a 6-mile loop from the east end of the Asticou-Jordan Pond Road to the north end of Bubble Pond and a return by a lower southerly route on the west side of the pond (only the return section would be built).
-- Project B: a 7-mile loop connection from the Asticou-Jordan Pond Road north around Jordan, Sargent, Little Brown (now Parkman), and Cedar Swamp Mountains.
-- Project C: a 1-mile carriage road connection from the B project along the existing Old Wood Road on the west side of Eagle Lake to the Eagle Lake highway.
-- Project D: a 1-mile carriage road extending from between Bubble Pond and Eagle Lake east to a connection with B or C, which would require a bridge over the proposed motor road between the Jordan Pond House and Eagle Lake Road (begun in 1922). (HRS 1989: 117-119)

Jordan-Sargent Mountain Road, 1922-1928.
It would take several years for engineer Paul Simpson and his crew to survey and design the 15 miles of new carriage roads. However, by 1922 this work was far enough along for Clement to begin construction on the section of carriage road proposed along the east sides of Jordan and Sargent Mountains (Project B), which included a dangerous area of rock slide that proved to be expensive and slow to overcome. This section also included the masonry, double arched Deer Brook Bridge, designed by Bosworth and completed by Samuel Candage in 1925. As the bridge was located on park land, it was the first bridge for which Rockefeller sought approval of the design from the National Park Service's Landscape Engineering Division, lead at the time by Daniel R. Hull. (HRS 1989: 127-128, 149-153)

Concurrent with Clement's work, Joy was constructing a carriage road on the west sides of the same mountains on land owned by Rockefeller (Project B). Here, two bridges were needed

within a tenth of a mile of each other to span streams that eventually combined to form Hadlock Brook and feed the two Hadlock Ponds. The Hemlock Bridge was completed in 1924 and the Waterfall Bridge in 1925, and were designed by Bosworth with high arches and curved parapets to highlight the dramatic topography. Candage was the builder of the two bridges, which were expensive to erect due to working in poor winter conditions, the site's difficult access, and having no suitable quarry nearby. (HRS 1989: 128-136)

In June 1924, Rockefeller obtained permission to build the parts of the Jordan-Sargent Mountain Road that passed through park lands. At the same time, while Clement and Joy were heading northward on opposite sides of the mountains, Paul Simpson was working on the location of the section of Jordan-Sargent Mountain Road that would connect the two sections in the Chasm Falls area. The last of the four bridges on the Jordan-Sargent Mountain Road, Chasm Brook Bridge, was built in this area. Designed by Bosworth and approved by the park, this low arched bridge was completed by Candage in 1926. A letter from Rockefeller to Ralston indicates that Joy finished the last section of the Jordan-Sargent Mountain Road in 1928. (HRS 1989: 146,148-149,156,186-187)

Hadlock Brook Bridle Path, 1922-1926.
While Chauncey Joy was building the carriage road on the west sides of Jordan and Sargent Mountains, he was also constructing a bridle path along the east side of Upper Hadlock Pond. In 1926, the path was complete with the construction of the Hadlock Brook Small Stone Bridge across Hadlock Brook by Candage. Bosworth design of the bridge was similar to the Little Harbor Brook and Jordan Pond Dam bridges. (HRS 1989: 154,159-161)

Eagle Lake Road (West), 1924-1926.
In December 1924, the Trustees permitted Rockefeller to begin road construction on a third leg, on the west side of Eagle Lake (Project C), with Edgar M. Walls leading a crew south from Eagle Lake Road and Walters G. Hill in charge of on-site engineering. The carriage road connected to Jordan-Sargent Mountain Road and appears on a 1926 Path Map. (HRS 1989: 149; CLR 2006: 304)

This project also marked a new method of constructing the carriage roads, as Wall was an employee of Rockefeller, who worked under the supervision of Rockefeller's new superintendent at The Eyrie, S.F. Ralston. Due to the amount of work that was going on around this time, Ralston, Simpson, and Rockefeller's lawyer A.H. Lynam became a three-person committee to oversee the various building projects, all under Rockefeller's oversight. (HRS 1989: 149)

Second Major Expansion of Carriage Road Plan, 1926-1927.
The mid-1920s were an important period in the development of the not only the carriage roads but motor roads as well. A few years earlier, in 1922, Rockefeller had pledged financial support to Superintendent Dorr's plan to construct a motor road between Eagle Lake Road (Route 233) and the Jordan Pond House. Construction of this road, the Jordan Pond/Eagle Lake Motor Road, was begun in 1922 but briefly halted in 1924 due to complaints by Senator Pepper and other summer residents that this road and others were a threat to the island's

wilderness qualities. At a hearing in Washington D.C., Rockefeller and Dorr rallied support from the island's year-round residents, the Maine congressional delegation, and personal testimonies and written letters from influential road proponents such as Charles W. Eliot to lift the work stoppage. The hearing did, however, result in heightened scrutiny and oversight of the motor road's impact on the area's wilderness qualities. (CLR 2007: 25-26)

In 1927 the park's first master plan was completed by Chief Landscape Engineer Thomas Vint and Assistant Director Arno Cammerer. The master plan proposed a general development scheme that included the "essential extensions of the park, plans for roads and trails, utility sites, and other developments," illustrating that present and future construction projects were part of an overall plan. The 1927 master plan supported the nearly completed Jordan Pond/Eagle Lake Road along with a recently approved motor road to the summit of Cadillac Mountain. Significantly, Vint and Cammerer remarked that normal objections to road construction in wilderness areas did not apply to Lafayette National Park because the Mount Desert Island landscape had existing wagon roads and had been logged for years. They went on to state that roads in national parks provided access to areas that would otherwise be unreachable except by "the most strenuous of exertions" and that roads could serve a public that by and large "…(did) not desire walking trips over rugged territory or strenuous climb." (CLR 2007: 27-28; from Cammerer and Vint, "Memorandum on a Development Plan…," as cited in MPDF 2007: E31,63)

Not surprisingly, proposals made in the 1927 master plan met some resistance. Earlier, in 1926, a group of summer residents, still stung by their defeat in the 1924 hearings, hired Charles Eliot II to work on an alternative park development plan. Eliot was a summer resident on the island and the nephew of Trustees founder Charles W. Eliot. The plan, "The Future of Mount Desert Island," was published in 1928, and proposed doubling the acreage proposed in the master plan and establishing ten "wilderness zones" that would be separate from developed areas. Eliot wrote, "the introduction of large scale man made objects such as buildings, roads, etc., should be avoided as far as possible. The park did not adopt Eliot's plan, while the 1927 master plan ultimately served as the foundation for many of the projects completed from 1928-1940. (CLR 2007: 28; from Eliot, "The Future of Mount Desert Island," as cited in HAER ME-11:24)

The favorable decision from the Washington D.C. hearing and the development of the park's master plan surely pleased Rockefeller in regards to the existing carriage road system. It also seemingly created possibilities for additional carriage roads, and Rockefeller's letter to Paul Simpson in December 1926 indicates that he was actively planning such roads on lands north of Eagle Lake. This came after the submittal of design studies earlier in the year by Bosworth for a bridge along the Eagle Lake Road (Route 233) that would make this area accessible by separating motor vehicle traffic from carriage traffic. Such a grade separation "tunnel" had actually been recommended by Dorr a few years earlier, in 1923, and supported by Rockefeller pending further study by his engineers. Rockefeller suggested some changes to the Bosworth's design, but opposed the Town of Bar Harbor's suggestion that the width of the bridge deck be increased to 27 feet from 21 feet. The bridge was completed by Candage in 1927. (HRS 1989: 163,165-168,170,184)

Bubble Pond Road, 1928-1930.
In a December 1926 letter to Simpson, Rockefeller began addressing two of the last projects associated with his 1921 carriage road plan, Projects A and D. Project A had likely been deferred because its route intersected with the Jordan Pond/Eagle Lake Road project, which by this time was nearing completion. In order to separate the proposed carriage road from the new motor road, a bridge was needed at their intersection at the north end of Bubble Pond. (HRS 1989: 168,178)

The Bubble Pond Bridge was conceived by Bosworth in 1926, but his design was subjected to numerous debates between Rockefeller and an alternative design prepared by Daniel Hull in the Landscape Engineering Division. The issue was eventually taken up with the National Commission of Fine Arts, who favored Hull's design because it had more "character and fitted into the landscape" than the Bosworth design that the Commission felt was more appropriate "in a city or private estate." Rockefeller then invited Daniel Hull and Thomas Vint to the park to inspect the motor roads and carriage roads built thus far and meet with Ralston and Candage at the Bubble Pond Bridge site. In the end, Assistant Director Cammerer chose Hull's design, which was slightly revised by Vint and Simpson and completed by a Philadelphia mason named Pringle Borthwick in 1928. (HRS 1989: 172-179, citing Letter, Cammerer to Rockefeller, 16 October 1926 and f.n. 304)

From this point forward, neither Bosworth or Candage were involved in the design and construction of Rockefeller's bridges. The remaining structures were designed by architect Charles Stoughton, who had built bridges at Pocantico Hills, and were built by Borthwick, Rockefeller's crews, and another general contractor. This bridge was also one of the first areas of the carriage road system that landscape architect Beatrix Farrand worked on. Here, she proposed plantings of maple, oak, and birch as well as dewberry, clematis, and sumac. (HRS 1989: 180-181)

Also by this time, the review process for all road projects had expanded to include input from island's various village improvement groups, and as a result the Bubble Pond Road project was not approved until early 1928. Soon after, Rockefeller directed Wall to begin working north from the Jordan Pond House end of the road and a Mr. Driscoll to begin working north from the west side of Bubble Pond to the Bubble Pond Bridge and continue north to Eagle Lake. The road was complete by 1930, according to a 1930 Path Map. (HRS 1989: 170-171,186; CLR 2006: 311)

Eagle Lake Road (East), 1927-1929.
In a December 1927 letter to Arno Cammerer, Rockefeller revealed that Simpson was studying two alternative routes for a carriage road on the east side of Eagle Lake, connecting the recently finished Eagle Lake Bridge to the anticipated construction of Bubble Pond Road. One option for the new road followed an existing road along the shoreline, while another route was located higher up the hill. Rockefeller selected the high road because it would afford better views of the lake and be less conspicuous. Construction of this road was completed in 1929. (HRS 1989: 184,189)

At the southern end of this road and near the intersection with Bubble Pond Road, Rockefeller and Farrand spent considerable time studying the Beaver Meadow Pool. A triple culvert was installed here to regulate the flow into the small pool, which was designed and managed as a trout spawning area. In time, waterlily, elder, lobelia, and pickerelweed were planted to "… make this place a really beautiful one." (HRS 1989: 186, citing Letter, Farrand to Rockefeller, 11 July 1931)

Hulls Cove Road and Paradise Hill Loop Road, 1927-1929.
The completion of the Eagle Lake Bridge in 1927 made possible the construction of new carriage roads on lands north of Eagle Lake, where Rockefeller planned magnificent views of Frenchman Bay. The Hulls Cove section passed alongside Breakneck Pond and Half Moon Pond, and included a loop that encircled Witch Hole Pond. To the north was a smaller loop that encircled Paradise Hill. Construction of these roads began in 1927 by two crews lead by a Mr. Emery and Mr. Stover, and were completed in 1929 and were built at the same time as Eagle Lake Road (East). (HRS 1989: 189-190)

That same year, the massive triple-arched Duck Brook Bridge was completed to provide a connection between the loop around Witch Hole Pond and Champlain Road (now New Eagle Lake Road). The bridge was designed by Charles Stoughton and built by Pringle Borthwick, and because it was located on his property, Rockefeller did not need government approval for its highly embellished design. This particular crossing over Duck Brook offered panoramic views of Frenchman Bay, so Stoughton included lookouts as part of the bridge design. (HRS 1989: 190-191)

Farrand and Miller travelled extensively over these roads and made many recommendations to Rockefeller. On the Paradise Hill Loop Road, Farrand wanted the bare banks to be planted thickly with trees and occasionally plantings of diervilla, wild rose, and sweet fern that occurred naturally in clumps. Where scars from road construction or quarrying operations needed concealment, she recommended plantings of blackberry and clematis to hang over steep rocks. Near Half Moon Pond she suggested spruce on the upper slopes and diervilla, sweet fern, and wild roses on the lower slopes, and in the Breakneck and Witch Hole pond areas she specified combinations of holly, azalea, clematis, elderberry, and Cassandra. (HRS 1989: 195-196)

Third Major Expansion of Carriage Road Plan, 1930.
By 1930, Rockefeller was anxious to resume work on the long delayed and controversial Amphitheatre section of the Asticou-Jordan Pond Road, originally part of his 1915 carriage road plan. To deter further opposition, Director Horace Albright recommended Rockefeller combine this project with his earlier offer from 1929 to expand the park's motor road system, which was widely supported by the public. As discussed earlier, it was by this time that Rockefeller's earlier idea of a limited number of motor roads separate from his carriage roads had grown into a much larger system of motor roads that would take visitors from the mountaintops to the coasts. In order to control how his vision might be realized, Rockefeller had proposed that he assume the costs associated with its construction, which amounted to around 4 million dollars. (CLR 2007: 32)

Heeding Albright's advice, Rockefeller then directed Simpson to submit to the National Park Service a new set of maps showing the final route of the Amphitheatre section, as well as a two new carriage roads that had been developed by Kidde that stretched from the northwest corner of Eagle Lake to the Town of Bar Harbor and Sieur de Monts Spring, via the Kebo Valley. By the end of 1930, plans were also underway for a carriage road from Eagle Lake to the Brown Mountain Road via the Southwest Valley, a road from Barr Hill to Day Mountain via a crossing over Stanley Brook, a road around Day Mountain and up to its summit. Most of these projects were ultimately built. (HRS 1989: 242)

Amphitheatre Road (part of Asticou-Jordan Pond Road), 1930-1932.
The planning and design for the alignment of this carriage road and its three bridges had been commenced a decade earlier by Rockefeller, Charles Simpson, and George Dorr. Charles Stoughton completed the designs of the three bridges for this section, which were submitted to the Fine Arts Commission before seeking park approval. Because of Rockefeller's practice of building a road from each end, the West Branch Jordan Stream Bridge across Jordan Stream and the Amphitheatre Bridge across Little Harbor Brook were completed first, in 1931, while the Cliffside Bridge in the middle was finished in 1932. All three bridges were built by Rockefeller's crews and supervised by Ralston, and featured more rustic appearances than the most recently completed Duck Brook Bridge. (HRS 1989: 217)

Rockefeller also commented on an incident of unintentional yet obvious damage to vegetation by workers getting water at one of the springs. To prevent further damage, Rockefeller suggested hiring a water boy to help limit the amount of access to the spring, erecting wire fences to provide a single point of access, and providing wood planks to protect the delicate vegetation. Rockefeller was clearly aware of the political sensitivity of this particular section of road; "Nothing would bring more criticism to our road work than the destruction of this naturally beautiful spot…" (HRS 1989: 227-228, citing Letter, Rockefeller to Ralston, 30 September 1931)

Aunt Betty Pond Road, 1930-1934.
This carriage road connected Eagle Lake to Brown Mountain Road at a lower elevation than the Jordan-Sargent Mountain Road, instead passing through part of the Southwest Valley by Aunt Betty Pond, Cedar Swamp, and Gilmore Meadow. Simpson had made final adjustments to the location and marked the grades for construction by the end of 1930, and in 1931 Chauncey Joy began construction on several sections while Rockefeller and Simpson debated its connection with the Jordan-Sargent Mountain Road through the Chasm Brook Valley. Simpson prepared three preliminary surveys of alternative lines for this section, and a route with the best scenery was chosen despite its less than ideal grade. It was completed by 1934, according to a 1934 Path Map (HRS 1989: 211,213; CLR 2006: 312)

Farrand and Rockefeller corresponded about the grading of slopes along Aunt Betty Pond Road, with Farrand commenting that some of the slopes were too convex in shape and that she preferred concave slopes because they presented a natural looking landform. Rockefeller agreed, and added that such slopes could be modified if no trees needed to be cut. He also admonished any use of a perfectly straight "railroad cut" on the slopes. (HRS 1989: 209,213,

citing Letter, Rockefeller to Farrand, 28 October 1931)

A debate also ensued between Farrand and Simpson on whether Gilmore Meadow should remain a meadow or be flooded to become a lake. Farrand felt it should be left as a picturesque meadow, while Simpson believed it could serve as a fire-fighting reservoir and at the same time offer a reflection of the adjacent mountains. Rockefeller intervened and sided with Farrand, and directed Simpson to design a wide, low culvert at the north end of the meadow similar to the structure at the Beaver Meadow Pool. It was completed in 1934. (HRS 1989: 213-215, App. I)

Regarding plantings along Aunt Betty Pond Road, Farrand noted the "beautiful growth …in the valley, unusual in its fine deciduous trees," and suggested that the roadsides be planted with Cassandra, wild rose, winterberry, and clematis, and along one particular bank a dense planting of birch and spruce to "…bring the wood edge down to the road." She also criticized Charles Miller's (the Rockefellers' nurseryman) tendency of planting trees in straight lines. (HRS 1989: 215, citing Letters, Farrand to Rockefeller, 5 October 1931, 10 October 1931, 3 June 1932)

Barr Hill-Day Mountain Road, 1930-1934.
Concurrent with the work on the Amphitheatre and Aunt Betty Pond carriage roads, Rockefeller and Simpson were working on plans for a carriage road and two bridges connecting Barr Hill to Day Mountain, and a crossing over the park's proposed Day Mountain Motor Road that would connect with the Bubble Pond carriage road. This road is shown on a 1934 Path Map, but the bridge over the park road would not be built until later. (CLR 2006: 312)

The Jordan Pond Road Bridge was designed by Charles Stoughton and completed in 1932 by the Augusta firm, Wyman and Simpson (the son of Charles and brother of Paul). Like the Eagle Lake Bridge, this structure carried a town road (Jordan Pond Road) over the carriage road, and as such the underside was faced with stone but the deck above was not ornamented. The construction period for the bridge took longer than usual because water and sewer lines along the town road that served Seal Harbor had to be relocated. Farrand provided detailed planting recommendations, including a heavy cover of Scotch pine as well as mountain ash and white pine along the upper portions of the banks and big groups of sumac, Japanese maple, barberry, and sweetbriar rose, and various vines on the lower portions "…in order to add to the illusion of depth in the ravine." (HRS 1989: 228-235, citing Letter, Farrand to Rockefeller, 13 October 1932)

The other bridge carried the carriage road over the Stanley Brook motor road that was under construction. Because Rockefeller wanted a good view of the stream from both levels, the deck and arch were finished with stone. Stoughton designed the bridge with three arches, the largest in the middle for the motor road and flanked by smaller arches on the east end for the stream and the west end for a trail. Ralston and his crews completed the bridge in 1933. Farrand's plantings here included pines, cedars, maples, sumac, and other shrubs (HRS 1989: 237-238).

Day Mountain Loop Road and Day Mountain Summit Road, 1935-1940.
These two roads connected to the Barr Hill-Day Mountain Road. By 1935, several surveys had been completed around the mountain and to the summit. The construction sequence is somewhat unclear, but according to a 1937 Path Map, a carriage road extended from the east terminus of Barr Hill-Day Mountain Road (at the future Triad-Day Mountain Bridge), to around the north and east sides of Day Mountain, and to an area marked "caves." Between 1937 and 1940 this road was extended to the south slope of Icy Hill and up to the Day Mountain summit, while during the same period a connecting section was built from Icy Hill, around the west side of Day Mountain, to a connection with Barr Hill-Day Mountain Road, thus creating a loop. The road to the summit violated the Trustees dictum that the island's mountaintops would be protected from road development, but Day Mountain was a relatively low summit on Rockefeller's own land, and would become a popular destination for drives out of Seal Harbor. (HAER 1997: 48,52; CLR 2006: 314; HRS 1989: 238-239)

The Triad-Day Mountain Bridge, the seventeenth and last masonry carriage road bridge associated with the carriage road system, was built by the National Park Service and the Bureau of Public Roads as part of the Day Mountain motor road project. Although this bridge would provide a direct link between the Bubble Pond and Day Mountain carriage roads, Rockefeller chose to wait for the park to build the road in conjunction with the motor road, because he could gain access to both areas through other carriage roads. Site work for the bridge design was by the park's resident landscape architect, Benjamin Breeze, and reviewed by Thomas Vint, while Leo Grossman and Philip Mabel represented the Bureau. Construction of this bridge was completed in 1940. (HRS 1989: 238,245; LCS 2013: Br75S)

Unbuilt Segments.
Most of the carriage roads envisioned by Rockefeller were constructed except for a short north-south route in the Amphitheatre Valley paralleling Little Harbor Brook (see Figure 16) and two longer roads through the Kebo Valley. In 1929, in conjunction with preparing plans for expansion of the island's motor road, the Kidde Construction Company designed two carriage roads through the Kebo Valley and the Great Meadow to provide connections from the Town of Bar Harbor to Eagle Lake and Sieur de Monts Spring. Plans, profiles, and bridge designs were developed and approved by the National Park Service as well as Frederick Law Olmsted, Jr. (HRS 1989: 242)

In 1935, Acadia secured a significant appropriation for road construction, and the National Park Service, in conjunction with the Bureau of Public Roads, took over the responsibility of future development of roads in the park. As part of this process, the Kidde Company transferred their construction drawings for all of the motor roads and carriage roads to the government. Over the next 22 years, the remainder of Rockefeller's motor road plan was constructed, among them the Kebo Mountain Road and Kebo Mountain Road Extension, completed in 1938 and 1940. The two carriage roads in this area, however, were never built. (HRS 1989: 242)

The 1935 funding, and subsequent appropriations, was good news to Rockefeller and signaled a change in his participation in park projects, from an active role in design, construction, and direct project funding to a role of acquiring and donating land. Nonetheless, Rockefeller

frequently consulted with the Park Service and the Bureau about the road and bridge designs. In the years and decades that followed, many of the carriage roads and bridges, as well as the two gatehouses, that were still on Rockefeller land were transferred to the park.

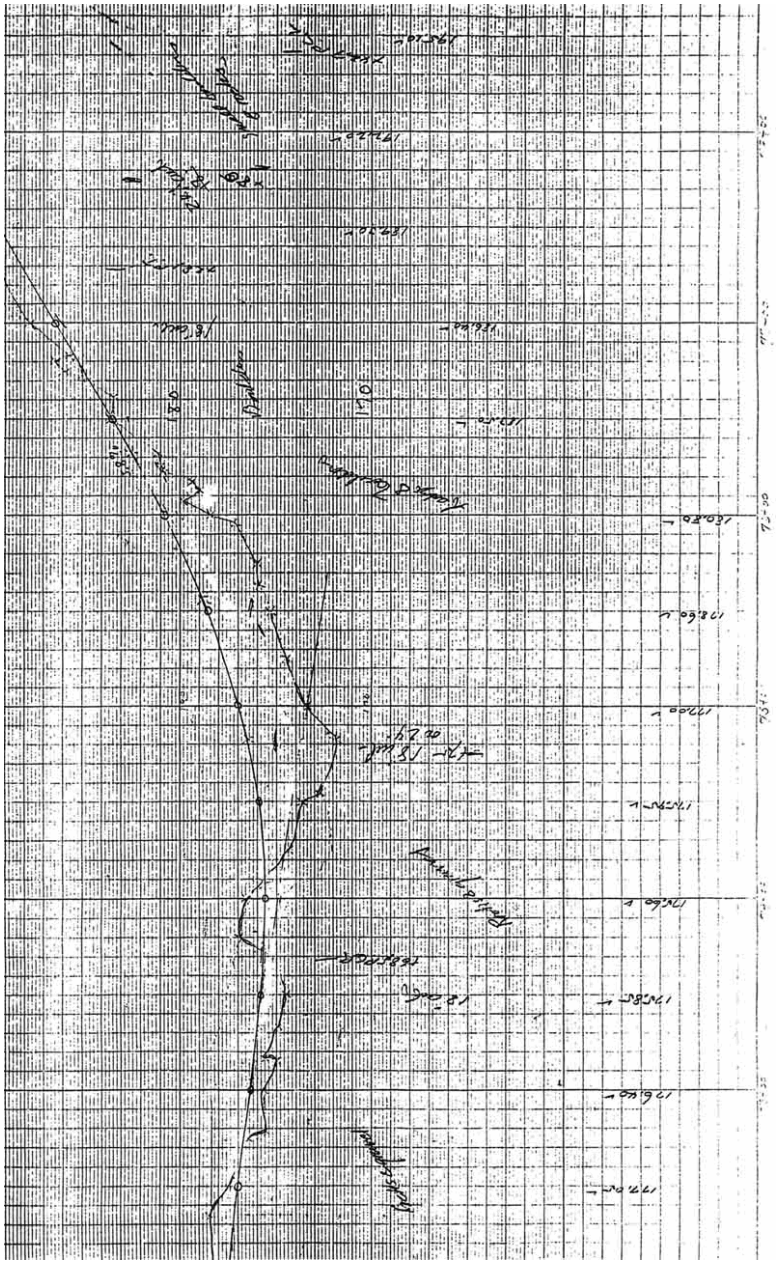
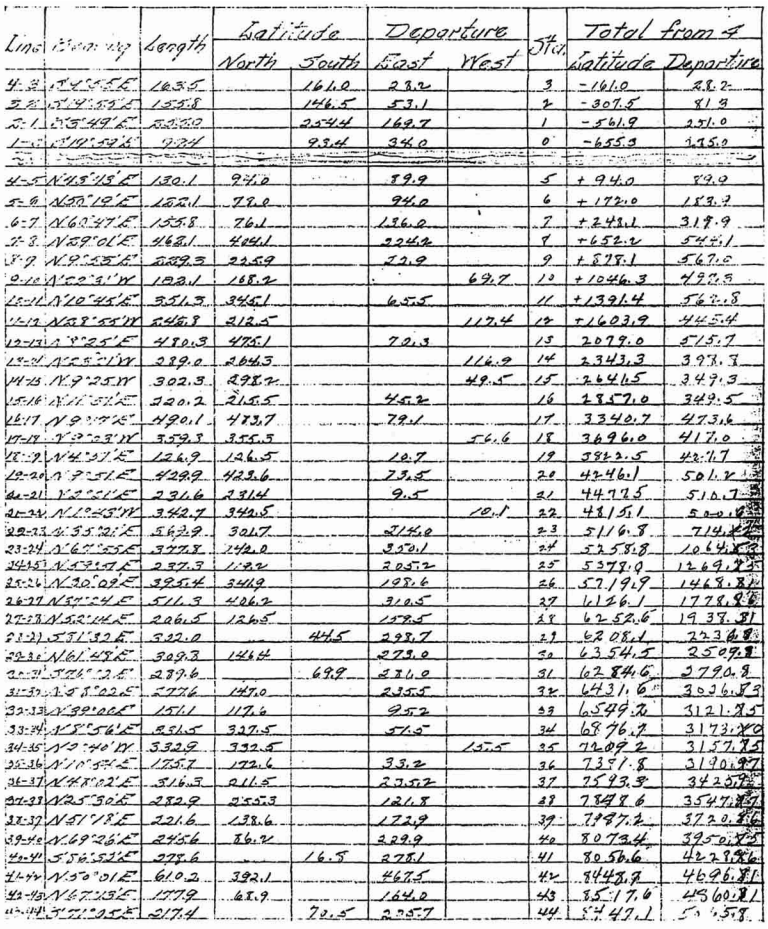


Figure 10. Reconnaissance survey for Aunt Betty's Pond Carriage Road, n.d. (Historic Resource Study 1989:45)



Line	Bearing	Length	Latitude		Departure		Sta.	Total from 4	
			North	South	East	West		Latitude	Departure
4-3	S14°55'E	166.5		161.0	23.2		3	-161.0	23.2
3-2	S14°55'E	153.8		146.5	53.1		2	-307.5	81.9
2-1	S35°49'E	224.0		254.4	169.7		1	-561.9	251.0
1-0	S30°39'E	93.4		93.4	34.0		0	-655.3	285.0
4-5	N45°15'E	130.1	91.0		89.9		5	+94.0	89.9
5-6	N50°19'E	152.1	78.0		94.0		6	+172.0	183.9
6-7	N64°47'E	155.8	76.1		136.0		7	+248.1	318.9
7-8	N39°01'E	463.1	404.1		226.2		8	+652.2	544.1
8-9	N9°55'E	229.3	226.9		22.9		9	+878.1	567.0
9-10	N52°31'W	192.1	118.2			69.7	10	+1046.3	497.3
10-11	N10°45'E	351.3	345.1		65.5		11	+1391.4	562.8
11-12	N28°55'W	246.8	212.5			117.4	12	+1603.9	445.4
12-13	N9°25'E	480.3	475.1		70.3		13	2079.0	515.7
13-14	N25°21'W	289.0	264.3			116.9	14	2343.3	398.8
14-15	N9°25'W	302.3	298.2			49.5	15	2641.5	349.3
15-16	N11°51'E	220.2	215.5		45.2		16	2857.0	349.5
16-17	N9°11'E	490.1	483.7		79.1		17	3340.7	428.6
17-18	N3°23'W	359.3	355.5			56.6	18	3696.0	417.0
18-19	N4°31'E	126.9	126.5		10.7		19	3822.5	427.7
19-20	N7°51'E	429.9	423.6		73.5		20	4246.1	501.2
20-21	N2°21'E	231.6	231.4		9.5		21	4477.5	510.7
21-22	N12°43'W	342.7	334.5			10.1	22	4811.1	500.6
22-23	N35°32'E	562.9	301.7		276.0		23	5116.8	776.6
23-24	N67°55'E	377.3	142.0		350.1		24	5258.8	1064.8
24-25	N42°54'E	297.3	219.2		205.2		25	5378.0	1269.2
25-26	N30°09'E	395.4	344.9		198.6		26	5719.9	1463.8
26-27	N57°24'E	511.3	406.2		310.5		27	6126.1	1778.6
27-28	N52°14'E	206.5	126.5		138.5		28	6252.6	1917.3
28-29	S51°32'E	322.0		44.5	298.7		29	6208.1	2216.0
29-30	N61°48'E	309.3	146.4		273.0		30	6354.5	2489.0
30-31	S74°12'E	289.6		69.8	281.0		31	6284.6	2770.0
31-32	S8°22'E	577.6	147.0		235.5		32	6431.6	3005.5
32-33	N39°00'E	151.1	117.6		95.2		33	6549.2	3100.7
33-34	N5°56'E	251.5	327.5		51.0		34	6876.7	3151.7
34-35	N9°40'W	332.9	332.5			135.5	35	7209.2	3016.2
35-36	N11°54'E	175.7	172.6		33.2		36	7381.8	3049.4
36-37	N48°02'E	316.3	211.5		235.2		37	7593.3	3284.6
37-38	N25°30'E	282.9	255.3		121.8		38	7848.6	3406.4
38-39	N51°18'E	221.6	138.6		172.9		39	7987.2	3579.3
39-40	N69°26'E	245.6	86.2		229.9		40	8073.4	3809.2
40-41	S56°52'E	278.6		16.5	278.1		41	8056.6	4087.3
41-42	N30°01'E	610.2	392.1		467.5		42	8448.7	4554.8
42-43	N67°35'E	177.9	68.9		164.0		43	8517.6	4718.8
43-44	S71°05'E	217.4		70.5	205.7		44	8447.1	4924.5

Figure 11. Latitude and departure calculations for Aunt Betty's Pond Carriage Road, n.d.. (Historic Resource Study 1989:46)

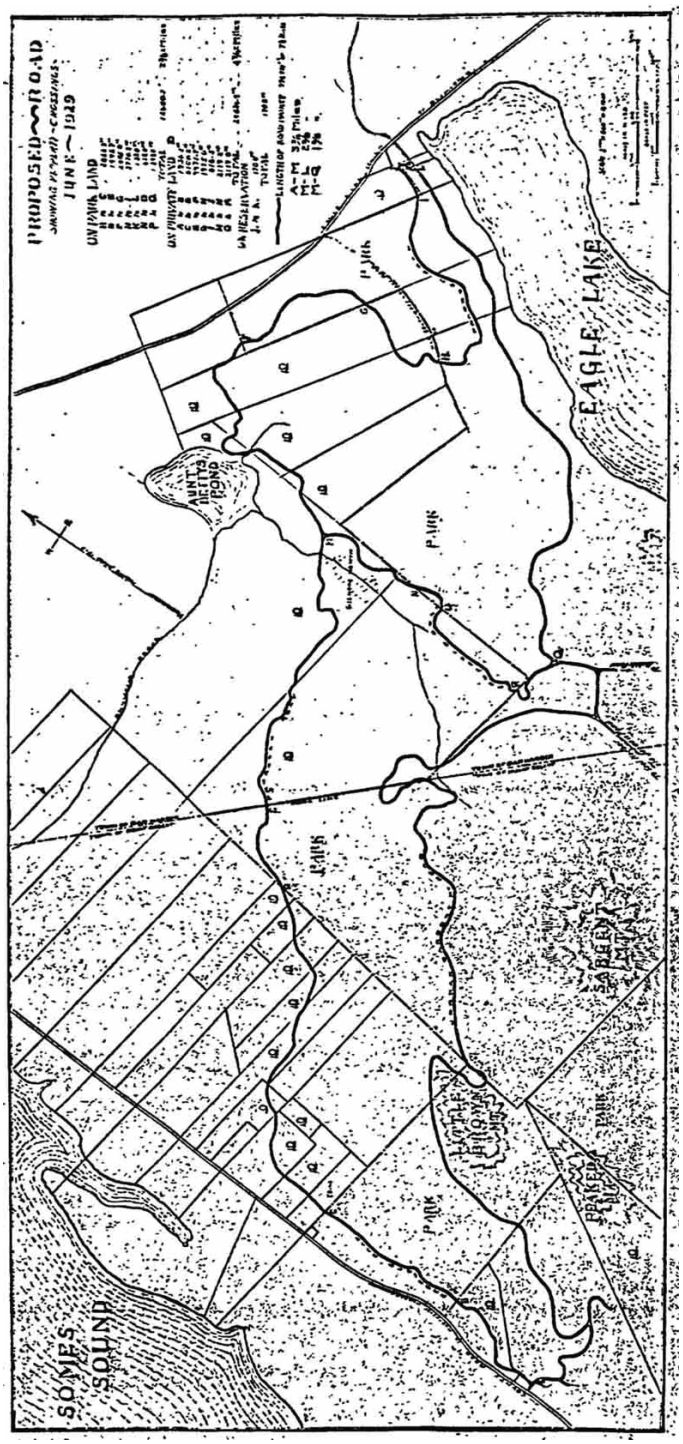


Figure 12. Plan for Aunt Betty's Pond Carriage Road, 1929. (Denver Service Center, eTIC, ACAD_123_80403_[id26711])

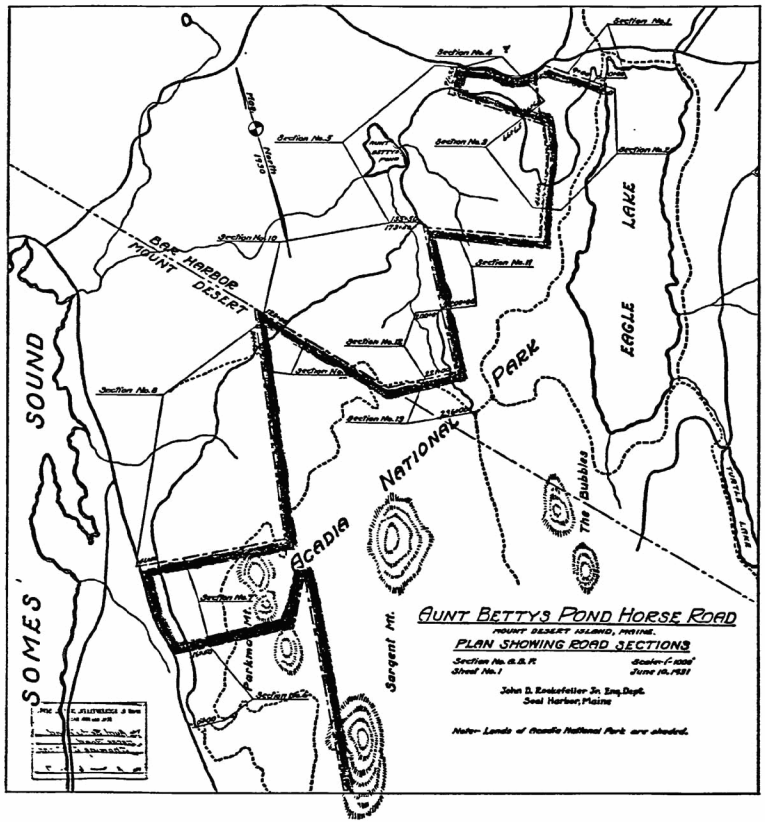


Figure 13. Key to plan and profile drawings for Aunt Betty's Pond Carriage Road, 1931. (Denver Service Center, eTIC, ACAD_123_80404_[id26712])

Figure 14. Moving rocks with "dogs" on one of the carriage roads, no date. (Historic Resource Study 1989:295)

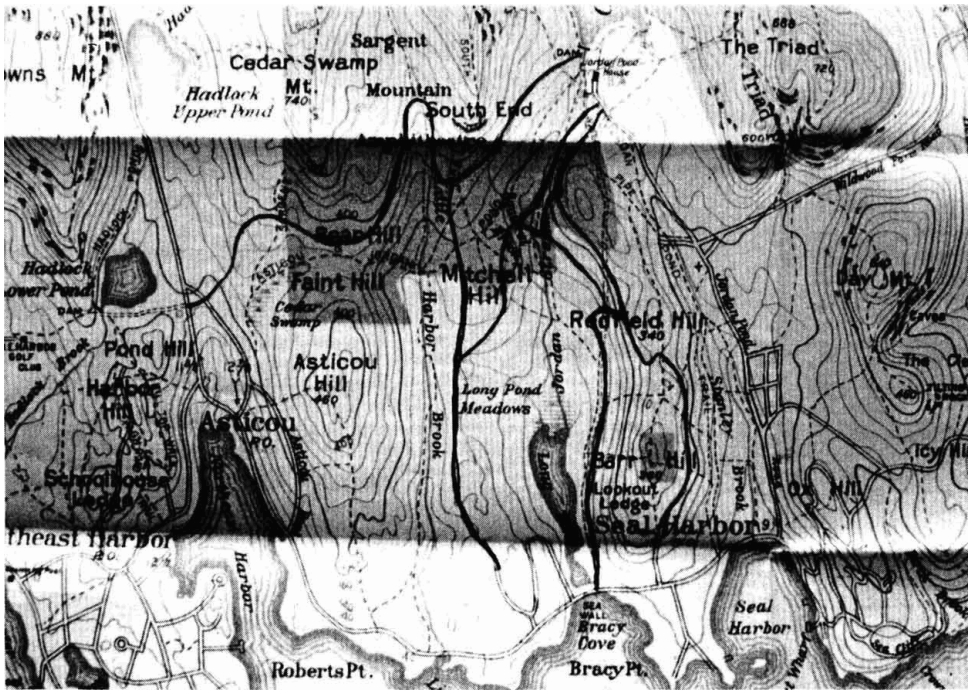


Figure 15. Map from 1915 showing Rockefeller's first plan of the carriage roads, shown in thick black lines. (Historic Resource Study 1989:76)

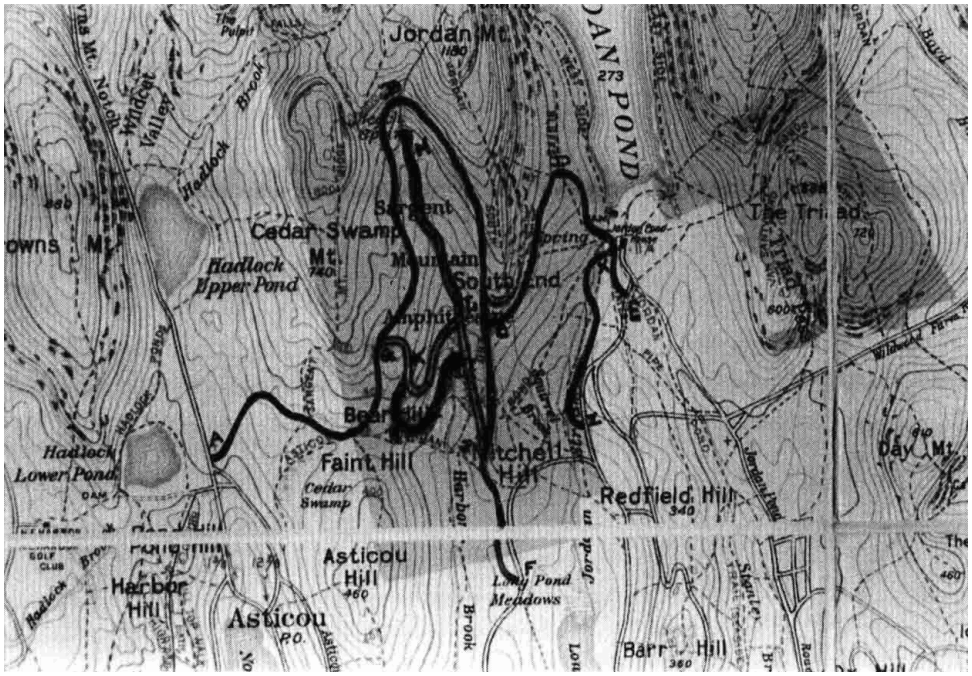


Figure 16. A 1918 map of Rockefeller's previously approved roads and two new roads, including Little Harbor Brook Road (letters G,K,H,I,J). A north-south road through Amphitheatre Valley (G,K,L,M,L I) was not built. (Historic Resource Study 1989:87)

CARRIAGE ROADS DECLINE AND REHABILITATION, 1940-PRESENT

Carriage Road Maintenance and the 1947 Fire:

The completion of the Day Mountain Summit Road and the Triad-Day Mountain Bridge in 1940 represented the last road and bridge built for Acadia's carriage road system. In the years that followed, Rockefeller established and funded an ongoing maintenance program for the carriage roads under S.F. Ralston's supervision.

As discussed earlier, the Civilian Conservation Corps constructed signs for the carriage roads, and it is likely they occasionally contributed to the care and maintenance of the roads, especially those on park land. By 1941, however, the focus of the CCC was shifted to civil defense projects, and soon after the nation's entry into World War II the CCC camps were closed. During the war, minimal work was accomplished on the carriage roads or elsewhere in the park. (CLR 2007: 65)

The integrity of the carriage roads was severely tested in October 1947, when after an unusually dry summer, 17,128 acres of land on Mount Desert Island were devastated by the "Bar Harbor Fire." More than 170 homes of year-round residents and 67 summer cottages were destroyed. Several park buildings and structures were lost, such as the springhouse building at Sieur de Monts Spring, as well as log guardrails, road and trail signs, gates, and most of the plantings by Beatrix Farrand along the carriage roads. All of the carriage roads north of

Jordan Pond were directly impacted by the fire, and as Rockefeller and Simpson had anticipated, they were brought into service as firebreaks and access routes. (CLR 2007: 65-66; HRS 1989: 247)

Since the National Park Service had no funds allocated to meet this emergency, Rockefeller stepped in, keeping in touch with park personnel and his own workers on the island. He directed his efforts and those of his foresters primarily toward cleaning up areas that remained fire hazards, as well as reestablishing the tidiness of both the roadsides and the views from the roads.

By this time, however, opposition regarding the removal of downed trees in the forests had begun to emerge. Rockefeller's position on the matter had not changed, as suggested in a letter to Horace Albright in 1953, by then the former Director:
"As you know, the present trend among park men seems to be to leave nature alone. If a tree is dead, let it stand; if it blows over, let it lie—on the theory that nature should be undisturbed. While this policy is one thing if pursued in the interior of a dense forest where only the hunter goes, to pursue it in any area of a park like Acadia,…is to present a roadside aspect of standing and down dead timber…" (Guidelines 1989: 61, citing Letter, Rockefeller to Albright, 8 May 1953)

Upon Rockefeller's death in 1960, the National Park Service assumed maintenance of the historic carriage road system. (HRS 1989: 247)

Increase in Park Visitation and Changes to the Carriage Roads:
In the years after World War II, an enormous increase in visitation at national parks began to burden park facilities and infrastructure that had been necessarily neglected during the war. In 1956, the National Park Service implemented "Mission 66," a ten-year program of development designed to help the parks accommodate visitors. Mission 66 projects at Acadia focused on developed areas by adding restrooms, improving access, and upgrading utilities. One such project in an area adjacent to the historic carriage road system was the construction of the Hulls Cove visitor center and parking lot. At this time, a road/trail was built to connect the visitor center to the Paradise Hill Loop carriage road. (CLR 2007: 69-70, 74-75)

The steady increase in visitors was also accompanied by a steady increase in vehicular traffic, which resulted in several realignments to the historic motor road system in the early 1960s. One project that affected the historic carriage road system involved updating Jordan Pond/Eagle Lake Road, the first motor road built in the park, to standards and details consistent with the later constructed segments of the road system. In addition to widening the entire roadway, the tight radius curve passing alongside the north shoreline of Bubble Pond was shifted well away from the water, creating an at-grade intersection of the carriage road and the motor road. This realignment eliminated thru traffic under the bridge, but still allowed access to a parking lot retained adjacent to the shoreline until around 1985 when the parking lot was removed to protect water quality and the trampled shoreline. At this time, the roadway under the bridge was removed and made into a trail. Throughout these changes, the use of the bridge itself for carriage road users was not changed. (CLR 2007: 70-71; Review comments, Judy

Hazen Connery, 15 August 2013)

The State of the Carriage Roads Declines:
Although maintenance of the carriage road system had become the park's responsibility in 1960, maintenance budgets were not sufficient to keep the carriage roads and associated systems from falling into a state of disrepair and losing their historic and structural integrity. In the 1970s and 1980s, conditions were dire and portions of the system had become hazardous to users. The road surfaces and base materials had eroded away, the road crown had been lost, and shrubs and trees were growing in the roadside ditches. The drainage system was failing in many locations, resulting in water running down and eroding the road surfaces. Coping stones had toppled down hillsides, retaining walls were collapsing, and side slopes were eroding into nearby ditches. Also, once scenic views and vistas had become overgrown. (Environmental Assessment 1993: 2)

In addition to its poor condition, by the late 1980s visitors and residents were complaining about the behavior of some users. While the roads were originally built for horses and carriages, they were now almost exclusively used for walking and bicycling. Particular concerns were the conflicts between bikers and other users, that there were too many bicyclists, excessive bicycle speed, and discourteous and unsafe behavior. This change was occurring in large part because of development of the mountain bike, whose wide tires and multiple gears had made bike riding easier. (Jacobi and Manning 1997: iv,1)

Many users were also becoming lost on the carriage roads because of vague directional signs: for example, "Around the Mountain" or "Bar Harbor" was indicated in both directions on one sign. This created not only a safety hazard for visitors, especially in the winter, but also a burden for park staff—confused visitors had to be located by rangers and returned to their cars. Many lost visitors seeking assistance knocked on the door of Diana Abrell, a resident of the Brown Mountain Gatehouse. Abrell's solution was a numbering system for carriage road intersections, accompanied by a pocket-sized guide that included system maps. The park adopted the numbering system and inscribed the numbers on small wood signs, which were attached to the signposts at the intersections. (Review comments, Judy Hazen Connery, 15 August 2013)

Planning for Preservation and Rehabilitating the Carriage Roads:
Despite their declining condition, the carriage roads, gatehouses, and most of the masonry bridges were listed on the National Register of Historic Places in 1979 because of their skillful craftsmanship and engineering, as well as their historical association with the affluent summer colony that resided in the Mount Desert Island region in the early twentieth century. However, it was 1986 when two important events occurred that would influence the future of the historically-significant carriage road system. First, the decades-long process of establishing the final park boundary was achieved. Second, the nonprofit charitable organization Friends of Acadia (FOA) was established to identify and contribute to essential conservation projects in Acadia National Park and the surrounding communities, through a combination of conservation grants, volunteer mobilization, programs, and advocacy. (Review comments, Rebecca Cole-Will, 2 August 2013 and Judy Hazen Connery, 15 August 2013; FOA website)

Soon thereafter, park management began to engage the public in a planning process to develop a general management plan (GMP) for the park that would identify the highest priority park management goals for the next fifteen to twenty years. During the GMP planning process, rehabilitating the carriage road system was identified as one of the park's highest needs, and even before the GMP was finalized in 1992, the National Park Service partnered with FOA to raise money for the rehabilitation process, and sponsored research on the history and construction of the carriage roads, bridges, gatehouses, and vistas that would guide the rehabilitation effort. Between 1991 and 1996, the FOA raised 4.3 million dollars that was matched by federal finding to support a major rehabilitation effort and establish an endowment fund that would support maintenance of the carriage roads in perpetuity. The funding campaign was one of the first major accomplishments of the FOA, and became a national model for private/public partnerships. (Review comments, Rebecca Cole-Will, 2 August 2013 and Judy Hazen Connery, 15 August 2013)

Historic Resource Study and General Management Plan.
In the late 1980s, in preparation for developing the general management plan, the National Park Service contracted with Rieley & Associates to conduct additional research on the historic significance of the carriage roads and to provide recommendations for their restoration, maintenance, and use. In 1989, the report "Historic Resource Study for the Carriage Road System, Acadia National Park, Mount Desert Island, Maine," and a companion document, "Recommended Guidelines for the Restoration, Maintenance, and Use of the Carriage Roads at Acadia National Park" were completed. The study determined that the carriage roads of Acadia were a significant cultural, historic, and recreational resource. (Environmental Assessment 1993: 2)

In the 1992 General Management Plan, rehabilitating the carriage road system was identified as resource preservation:
"A major carriage road rehabilitation will be undertaken, followed by a comprehensive maintenance program. The rehabilitation effort will be directed by cultural landscape studies that build on earlier studies by Rieley and Associates. The program will include investigation of road construction techniques, analysis of road surfaces and bridge integrity, management of vistas, and development of rehabilitation specifications. Maintenance guidelines will be formulated to direct the long term preservation of the carriage road system." (Memorandum, Superintendent to Regional Director, 4 April 1994: 3; GMP 1992: 33,58)

The GMP placed the carriage road system into two of the park's four management zones. The road corridor, including bridges, vistas, gatehouses, and associated gatehouse landscape features were classified as a cultural zone, to be "managed for the preservation, protection, and interpretation of cultural resources and their settings and for their use and enjoyment by the public." The areas surrounding the carriage roads were in the natural zone, to be "managed to conserve and protect natural resources and ecological processes and provide for their use and enjoyment by the public." Maps within the GMP were intentionally conceptual, because implementation plans and specifications would be needed as the park addressed each goal. (GMP 1992: 33,58; Review comments, Judy Hazen Connery, 15 August 2013)

Concurrent with developing planning goals for carriage road system rehabilitation was physical work on the roads. In 1990, a 1.4-mile, privately-funded, demonstration project was undertaken to implement the recommendations of the Rieley report and to show the public what the carriage roads looked like when they were originally constructed and well-maintained. Work took place on the Amphitheatre Road [CR 20-21]. Road shoulders and drainage ditches were cleared of woody vegetation, culverts were replaced, and a new road surface was applied. The University of Maine's College of Forest Resources, guided and assisted by National Park Service staff, also rehabilitated five vistas. (Roberts 2012: 196; Environmental Assessment 1993: 3; CLR 1993: 11; Review comments, Judy Hazen Connery, 15 August 2013)

The demonstration project was widely praised and provided practical information about rehabilitation methods and materials. For example, soon after rehabilitation it was discovered that under heavy spring and fall rains, the surface aggregate mixture was subject to erosion, and new specifications were developed that included a higher percentage of clay binder. After this so-called "Miracle Mile" project was completed, Secretary of the Interior Manuel Lujan, Jr. and Director James M. Ridenour inspected the project and met with the Friends of Acadia staff and the youngest son of John D. Rockefeller, Jr., David Rockefeller. An agreement was reached whereby the government would allocate four million dollars of federal funding to be matched by private donations raised by the FOA. The federal money would pay for rehabilitating the roads, while the FOA money would create an endowment to fund yearly maintenance in perpetuity. In 1991, Friends of Acadia initiated their fundraising campaign, and by 1996 had raised $4.3 million. (Environmental Assessment 1993: 3; Church, 2010; Review comments, Judy Hazen Connery, 15 August 2013)

The first phase of the rehabilitation project was funded in Fiscal Year 1992. Work was directed at stabilizing the road system and preservation maintenance, including cleaning roadside ditches, cutting vegetation growing in road shoulders and ditches, and surface grading in areas of washouts. Michael Williams, a National Park Service engineer for the Denver Service Center, moved to Acadia from Boston, where he had overseen the successful rehabilitation of Faneuil Hall. Williams was appointed to oversee stabilization and rehabilitation of the carriage road system. In the fall of 1993, another test section one mile in length was completed to inform the preparation of plans and specifications for rehabilitating the entire carriage road system, anticipated to begin the following year. (Environmental Assessment 1993:3; Review comments, Judy Hazen Connery, 15 August 2013)

Environmental Assessment for the Carriage Road System.
In compliance with the National Environmental Policy Act, Acadia staff prepared an "Environmental Assessment for Rehabilitation and Continuing Maintenance of Carriage Roads in Acadia National Park, Maine." Published in December 1993, the assessment outlined National Park Service plans and solicited public comments on proposed work. Because the management zoning map in the GMP was intentionally conceptual, the boundaries between the cultural and natural zones needed to be refined before the rehabilitation could proceed. Park staff reviewed historic plans and drawings of the carriage road system and associated vistas, estimated maintenance costs, and assessed environmental and cultural resource impacts of a

narrow zone of management (to the back slope of ditches) versus the wider zone preferred by John D. Rockefeller, Jr.—to remove dead and downed trees as far as the eye could see into the surrounding forest. This was done to ensure the correct balance between preserving the historically significant carriage road system while minimizing impacts on the adjacent natural resources. (Memorandum, Superintendent to Regional Director, 4 April 1994: 3-4; Review comments, Judy Hazen Connery, 15 August 2013)

Several alternatives were considered to address the safety and resource preservation goals for the carriage roads. The alternatives included no action, routine maintenance, and two rehabilitation strategies:

Alternative A: No action would maintain the status quo. Only minimal maintenance and rehabilitation activities would be performed, including periodic grading on short sections of road surface, cutting dead trees which have fallen across the road, and emergency culvert replacement.

Alternative B: Perform annual maintenance without first performing major rehabilitation work on the existing roads. Minor surficial and drainage repairs would be addressed in an attempt to keep the roads open to the public. Minor vegetative maintenance along roadside would prevent encroaching vegetation from obstructing the road system.

Alternative C: Rehabilitate the carriage road system followed by a continuing maintenance program to maintain the roads to their repaired condition. This action would include correcting deficiencies in road structure, drainage system, and retaining walls as well as removing vegetation that impacts road drainage, road uses, and scenic vistas. It would also reduce the annual maintenance effort necessary to maintain these roads for the enjoyment of the public and be more cost effective in the long term. The proposed work would consist of four major work activities: road rehabilitation, drainage repair, erosion control, and vegetation management including vista rehabilitation (more in Environmental Assessment 1993: 5-6).

Alternative D: Rehabilitate and maintain the carriage roads, all historic vistas, and adjacent woodlands according to the original Rockefeller standards, which meant forests along the roads would be completely cleaned of young and dead trees so users could see well back into the forest. In addition to rehabilitating the road prism as described in Alternative C, the woodlands adjacent to the carriage roads would be maintained in a highly manipulated state, and all documented historic vistas would be rehabilitated regardless of changes in the historic view over the years. (Memorandum, Superintendent to Regional Director, 4 April 1994: 2-3; Environmental Assessment 1993: 5-6)

Alternatives A and B were eliminated because they would not meet the necessary visitor safety objectives, would be insufficient to meet the structural and historical preservation objectives, and would not be cost effective without first performing major rehabilitation. Alternative D was rejected because, although it would restore the historic scene, it would result in an increase in environmental and economic impacts caused by extensive vegetation management. Decisions to take the widest possible interpretation of the cultural zone and subsequently

rehabilitate Rockefeller's manicured landscape 70 to 100 feet beyond each side of the road, and all historic vistas, would require extensive clearing resulting in undesirable impacts, including loss of wildlife habitat. In addition, the cost to extensively manicure the woodlands, and rehabilitate and annual maintain all historic vistas, would be prohibitive. Rehabilitating all historic vistas would also open up some undesirable views onto private development. (Memorandum, Superintendent to Regional Director, 4 April 1994: 3-4)

Alternative C was selected because it was determined that it best met the management objectives of protecting public safety and rehabilitating the historic carriage roads according to historic preservation standards, while minimizing environmental and economic costs. In areas where historic documentation was not available to determine the width of the cultural zone, especially regarding the extent of vegetation management to provide vistas, park managers would integrate cultural resource and natural resource management principles and techniques in determining the boundary. (Memorandum, Superintendent to Regional Director, 4 April 1994: 4)

The Maine State Historic Preservation Office and the Advisory Council on Historic Preservation concurred that the proposed rehabilitation of the carriage road system would have no adverse effect on the qualities for which the carriage roads, bridges, and gate lodges were previously listed on the National Register. The U.S. Fish and Wildlife Service, in consultation with park biologists, also concurred that the project would not adversely affect any species protected by the Endangered Species Act. A Finding of No Significant Impact was signed by the park superintendent, completing the decision to rehabilitate the carriage road system without further environmental impact analysis. (Memorandum, Superintendent to Regional Director, 4 April 1994: 4-5; Review comments, Judy Hazen Connery and Jeff Grey, 15 August 2013)

Cultural Landscape Report, Bridge Reconnaissance Survey, and Vista Assessment Report.
Several other reports were prepared to inform the carriage road rehabilitation work. In September 1993, Rieley & Associates completed a "Cultural Landscape Report" that included guidelines for rehabilitating the carriage road system. This report, along with their earlier two-volume Historic Resource Study, guided rehabilitation and maintenance efforts. In 1994, a "Historic Bridge Reconnaissance Survey: Carriage Road System, Acadia National Park" examined the system's 17 masonry bridges and 12 steel stringer bridges. Vanasse, Hangen & Brustlin engineers completed structural inspections and McGinley, Hart & Associates conducted historical research to determine the need for maintenance and rehabilitation of the bridges. In 1995, Pressley & Associates completed a "Vista Assessment Report, Carriage Road Rehabilitation Project, Acadia National Park, Bar Harbor, Maine," and identified approximately 200 potentially significant vista locations. From these, they recommended 100 vistas for reopening over the next several years. Vistas were assessed based on historical, ecological, and aesthetic criteria, as well as with the aim of providing a fairly even distribution of vistas throughout the carriage road system. (Vista Assessment 1995: i,2)

System-wide Rehabilitation Work Begins.
Under the direction of Michael Williams, rehabilitation and preservation maintenance on the carriage roads system began in 1994. As noted in the 1993 Environmental Assessment, historic drawings were referenced where possible and compared with existing conditions to assure

conformity with the original design. The roads were rehabilitated horizontally and vertically with crowns and superelevations engineered for a "best fit" to the existing road conditions. The project was accomplished by dividing the road into three sections. The contractor was directed to prepare detailed plans and specifications for each phase of work, submit them for review in January of the year work was scheduled, and be ready to begin work in the spring. (Environmental Assessment 1993: 18)

The project was financed by federal construction funds, along with matching funds from the Friends of Acadia. Work was completed in 1996, but did not address the Eagle Lake sections of the system or any of the system's bridges. Around $6 million was leveraged in federal appropriations to reconstruct the carriage roads, and $4 million was established in the Carriage Road Endowment. (Church 2010)

Improvements to the Visitor Experience.
In addition to the physical work accomplished on the carriage roads, and in response to the continued increase in carriage road users and reported conflicts between user types, the park applied the National Park Service's Visitor Experience Resource Protection (VERP) process to the carriage road system. This nine-step planning process was designed to help parks establish carrying capacities of national park areas and safeguard the quality of park resources and park experiences. From 1993-1997, park staff gathered information about carriage road use and users through visitor surveys, focus group sessions, and field equipment (counters, etc.). (Jacobi and Manning 1997: iv,2)

By 1997, to better manage carriage road use, park staff and the Friends of Acadia staff had established Rules of the Road guidelines for users. This included developing carriage road/biking brochures, placing Rules of the Road signs at major entrances, and educating the public about the rules at park visitor centers, contact stations, and bike rental shops and through messages on local television and in newspapers. Volunteer bike patrols were also initiated to monitor visitor use. (Jacobi and Manning 1997:1-2)

Recent and Ongoing Carriage Road Work:
While the rehabilitation project was completed on much of the system in the 1990s, work to maintain the roads and associated structures has been ongoing since. Programs of cyclic maintenance have been established and implemented to maintain road surfaces and engineering systems. The park is currently implementing a three-year long project to maintain the road surfaces, which must be periodically regraded, resurfaced, and compacted with the appropriate crushed stone aggregate mix to maintain proper drainage and prevent the crushed stone base layers from becoming exposed. This work typically requires the temporary closure of portions of the carriage road system. Other projects have replaced rusted corrugated metal culvert pipes and rebuilt headwalls, and have reset and repaired fallen and settled coping stones. These projects are typically performed by park staff and contractors as well as participants in the Acadia Youth Conservation Corps and volunteer with the Friends of Acadia, which work with the park's trail and carriage road crews on historic trail and carriage road maintenance projects. (PMIS 188061, PMIS 153980)

Between 2001 and 2004, federal funds and park user fees supported rehabilitating the 17 masonry carriage road bridges and installing new drainage/waterproofing systems. This work was necessitated by water penetrating into the bridge structures due to failing drainage systems and failing parapet mortar joints. Drainage systems continue to be repaired on the Eagle Lake road sections, and funding has been requested to complete rehabilitating these roads and some of the rustic wood bridges. (PMIS 199970, PMIS 161676)

In the summer of 2012, the Olmsted Center for Landscape Preservation, in collaboration with the State University of New York, College of Environmental Science and Forestry, completed field work for the "Cultural Landscape Inventory, Historic Carriage Road System, Acadia National Park." Six college students spent six weeks at the park to document the historic landscape of Acadia's carriage road system and gather information that would be used to maintain and preserve it (Figure 17). A total of 43.5 miles of carriage road were surveyed, photographed, and described using field survey forms and a Microsoft Access database designed for uploading into the park's GIS (Geographic Information System). See the "Analysis and Evaluation of Integrity" chapter for more information.

Figure 17. CLI Field School team, from left: Charlotte Evanofski, Sara Bonacquist, Benjamin Boisclair, Margaret Johnson, Catherine Ponte, and Tutku Ak. (State University of New York, College of Environmental Science and Forestry--hereafter SUNY-ESF--2013)

Analysis & Evaluation of Integrity

Analysis and Evaluation of Integrity Narrative Summary:

For the purposes of this CLI, the integrity of John D. Rockefeller's carriage roads within Acadia National Park is evaluated as a system rather than by individual segments. Physical integrity is evaluated by comparing landscape characteristics and features present during the period of significance (1917-1940) with current conditions. Many of the carriage road system's defining characteristics and historic features are still present. Mount Desert Island's diverse natural systems and features are still evident along the carriage roads, where visitors encounter forested mountainsides and valleys, mirrored lakes and ponds, as well as streams, wetlands, meadows, rock cuts, and outcrops. Forest vegetation is abundant and diverse, framing both intimate and panoramic views and vistas while providing dappled sunlight and shade on the roadways. The carriage roads themselves retain their picturesque and rustic design qualities. Road alignments curve along the island's topography and take visitors to the island's many scenic destinations. Stone bridges gracefully arch over streams and harmoniously blend with the landscape, while large coping stones provide a unique and safe barrier along the road edges. Original engineering features such as stone walls, culverts, and waterways continue to function as originally designed and also blend into the surroundings. The two gatehouse complexes and their distinctive steep-pitched roofs and horizontal bands of granite and brick have been restored and serve as park housing, their gatekeepers long since gone. Smaller-scale features including wood and stone gates, wood directional signposts at intersections, and trailhead signs complement the historic character of the carriage road system.

Not long after the carriage road system was completed in 1940, the Bar Harbor fire burned most of the forests along the road sections located north of Bubble Pond, and many of the plantings designed by Beatrix Farrand. However, reforestation efforts funded by Rockefeller and natural regeneration eventually restored the forest canopy. Such natural processes, and years of insufficient funding for road maintenance, contributed to the gradual deterioration of the carriage road system, evidenced by overgrown vistas, clogged culverts, and eroded road surfaces. System-wide rehabilitation work beginning in the mid-1990s reversed these conditions, and today the roads, associated buildings and structures, and vistas are in good condition. In the early 1960s, the portion of the motor road under the Bubble Pond Bridge was abandoned, and in the mid-1970s the deck of the Eagle Lake Bridge was widened, but these changes did not profoundly diminish the character of the bridges. All of the masonry bridges were rehabilitated in the early 2000s and most of the wood bridges have been replaced or repaired. Over the years, historic signposts at the intersections have been replaced-in-kind, and culverts, headwalls, and coping stones have been repaired or rebuilt as needed according to their original designs. The park has also begun locating and repairing some of the upper drainage systems along the carriage roads. Contemporary additions such as interpretive wayside signs, informational/directional/regulatory signs, kiosks, gates, fences, and benches have been installed, but their numbers are few and overall do not diminish the system's historic character.

INTEGRITY

Acadia's carriage roads, bridges, and gatehouses are identified in the park's Multiple Property

Documentation Form (MPDF), "Historic Resources of Acadia National Park," under the historic contexts "John D. Rockefeller, Jr. and the Development of the National Park System (1913-1958)," and "Rustic Design (1890-1958)" and its subthemes, "Picturesque Style (1890-1950)" and "Rustic Design of the National Park Service (1916-1958)." The MPDF outlines registration requirements that carriage roads, bridges, and gatehouses need to possess to be eligible for listing in the National Register. The carriage road should retain sufficient integrity of design and location, in this case, its original route and alignment (vertical and horizontal). Alterations should not substantially diminish the Picturesque design expression or historic alignment of the road. As is the case with the other circulation systems at Acadia, overall integrity of setting is important. Scenic vistas and associated natural features should be principally intact. However, the loss of minor features, such as roadside vegetation, does not necessarily render a resource ineligible. Integrity of materials and workmanship, including coping stone assemblages, stone bridges, or stone retaining walls, all signatures of Rockefeller's involvement in the design of the carriage road system, should also be present. A property must also retain principal small-scale engineering features such as rubble waterways, culverts, inlets, outlets, etc. In addition, Rockefeller's direct involvement in the execution of the bridges and gatehouses must be supported by documentary evidence. (MPDF 2007: F89; MPDF Amendment 2013: F2-3)

Location:
Location is the place where the historic property was constructed or the place where the historic event occurred. The original routes and alignments of the various carriage road segments on Mount Desert Island are unchanged. The carriage roads were purposely sited to have minimal impact on natural conditions, and they continue to make the park's diverse and scenic destinations accessible to the public. A small section of Jordan Pond/Eagle Lake motor road rerouted in the early 1960s at Bubble Pond created an at grade crossing, but did not alter the location of the carriage road or use of the bridge by carriage road users.

Design:
Design is the combination of elements that create the form, plan, space, structure, and style of a property. The design of the carriage road system is recognized as the Rustic Design style, which is still evident throughout the system. This style includes the Picturesque style as applied by John D. Rockefeller, Jr. and his team of architects, engineers, landscape architects, and skilled laborers, as well as the National Park Service Rustic Design style as executed by the National Park Service and Bureau of Public Roads. The winding alignment of the carriage roads continues to highlight the park's diverse landscapes and scenic views and vistas. The siting of the roads to fit the local topography and the use of walls and embankments to minimize the impact of the road corridors on the surrounding landscape is still readable. The two gatehouses, the arched masonry bridges and rustic wood bridges, and the many culverts and waterways continue to fit their locations perfectly due to their excellent design, scale, and use of naturalistic materials. The use of large coping stones as guardwalls remains a distinct and unique characteristic and is still intact, although some stones occasionally need to be reset. Since the historic period, the system has been rehabilitated, thus maintaining the integrity of the Rustic Design style that aimed to integrate the built features with the landscape.

Setting:
Setting is the physical environment of a historic property. The island's forests, including those that were replanted or regenerated naturally after the 1947 fire, eventually grew to a point where they blocked many of the views and vistas along the carriage roads. The rehabilitation work that began in the 1990s reopened vistas and restored the important relationship between the carriage roads and the park's diverse collection of mountains, valleys, lakes, ponds, meadows, wetlands, and outcrops, both alongside the roads and beyond. Many of Beatrix Farrand's plantings that were intended to enhance the road corridors were lost, but over the last fifty years have been replaced with natural growth.

Materials:
Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. Consistent with the Rustic Design style, Rockefeller deliberately chose to use the local granite on the road surfaces and bridge facades and in the construction of the walls, guardwalls, culverts, and waterways in part so that all of these features would visually harmonize with the surrounding landforms rather than prominently stand out. Smaller bridges and intersection signposts were constructed with wood so that they too would blend in, and the gatehouses featured stone, brick, and weathered timber to also fit the surroundings. Beatrix Farrand's plantings consisted primarily of native material, but much of it was lost in the fire.

Workmanship:
Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. The local granite used in most of the built features of the historic carriage road system was deliberately rough in texture and without smooth surfaces or straight edges so that it would complement the character of the island's rocky ledges and outcrops. The built features were carefully designed and constructed to achieve this appearance, and most have been rehabilitated and are in good condition. Tool marks are still visible on some of the rock outcrops, walls, and coping stones, especially on stones that are more rectilinear in shape. On the bridges, subtle differences in the patterns and cuts of stone can be seen, while the placements of the carved stones indicating the construction date also vary from bridge to bridge.

Feeling:
Feeling is the property's expression of the aesthetic or historic sense of a particular period of time. The design, materials, workmanship, and setting of Acadia's carriage road system continue to convey the feeling of a historic road system in a national park. The system's roadway and built features have developed a patina that conveys a sense of past time, a testament to how well executed the Rustic Design style was in blending the carriage roads in with the landscape while providing functional access to the park's scenic destinations.

Association:
Association is the direct link between an important historic event or person and a historic property. The carriage road system continues to reflect its 27-year evolution and the roles of John D. Rockefeller, Jr., Grosvenor Atterbury, William Bosworth, Charles Stoughton, Beatrix Farrand, and the National Park Service. The system also retains original features that convey the Rustic Design style.

METHODOLOGY

In the summer of 2012, the CLI Field School inventoried characteristics and features associated with the portions of the historic carriage road system within the park's boundaries. This was accomplished by surveying each road section of the system, which was defined by where carriage roads intersect with each other. The park has assigned each intersection—or node— with a number, which is identified on signpost(s) at the nodes (see CLI Hierarchy Map). Each carriage road section is identified by two numbers separated by a hyphen, thus the carriage road section designated as "CR 15-23" indicates that the section runs between nodes 15 and 23. The sequence of numbers assigned for a particular segment is also important as it indicates the direction of travel used in previous park inventory efforts. For the purposes of the Field School, the current division and numbering of carriage road segments and nodes was used. Thus, for section "15-23," the Field School's inventory began at Node 15 and ended at Node 23. It should be noted that the section numbers do not necessarily coincide with the division of the carriage road system by historic and current names or by construction dates.

Specific features inventoried included the following: built structures associated with the road design, such as bridges, walls, embankments, guardwalls (coping stones), culverts, and waterways; features found along the road corridor, such as trail intersections, signs, and gates; and observed views and vistas that extended from the road and into the surrounding landscape. Individual features were documented and numbered as they were encountered while moving in the direction of travel (from the beginning of a road section to the end of the section). Features were assigned unique identification numbers according to their road section number and the measured distance from the beginning of a section. The measured distance was determined by a counter on a "Roll-A-Tape" wheel in feet, which was then converted to decimals and entered into an Excel spreadsheet. Thus, a typical identification number for a feature was: ACAD CR 21-14_0.4492. The feature's construction materials and condition were noted on field forms. Digital photographs were also taken of each feature and assigned the same identification number. In a six week period, the Field School team documented: 670 culverts, 414 guardwalls, 57 guardwall/retaining walls, 114 retaining walls, 46 embankments, 28 bridges, 146 signs, and 7 gates.

HAER Documentation and the CLI Component Landscapes:
Due to the geographic extent of Acadia's carriage road system, and the large number of associated features, the Northeast Region CLI Program and the Field School team divided the 44 miles of carriage roads in the park into four distinct component landscapes in order to develop site maps at a legible scale. The extents of the four component landscapes align with documentation of the carriage road system by the Historic American Engineering Record (HAER), conducted in 1994-1997.

The HAER project produced nineteen sheets about the park's historic motor road system, carriage road system, motor road and carriage road bridges, gatehouses, as well as several developed areas and the park's geology. Four sheets were devoted to the carriage roads themselves, and except for a few short sections (CR 13-12, 15-23, 23-25), all of the current road sections within the park's boundaries

were shown on at least one sheet (roads outside of the park were not addressed). Although no specific reason was given in the documentation, the four divisions of the carriage road system appear to have been determined by a combination of factors, including location, natural features, topography, elevation, historical development, and similarities in road design. The three road sections not included in a HAER division were assigned to a division by the Field School team.

The four component landscapes and their associated road sections are as follows:

Eagle Lake and Witch Hole Pond Carriage Roads
[CR 1-2], [2-3], [3-1], [4-2], [4-5], [5-3], [5-DBR], [6-4], [6-7], [6-9], [7-8], [8-10s], and [9-8]

Hadlock and Aunt Betty Pond Carriage Roads
[CR 9-11], [10n-11], [11-13], [13-18], and [Rte.198-18]

Jordan and Sargent Mountain Carriage Roads
[CR 10s-14], [12-10n], [13-12], [14-15], [15-23], [16-15], [18-19], [19-12], [20-19], [20-22], [21-14], [21-20], and [21-22]

Bubble Pond and Day Mountain Carriage Roads
[CR 16-17], [17-7], [17-36], [17-37], [23-25], [25-16], [30-38], [36-38], [36-39], and [38-37]

Landscape Characteristic:

This section presents an analysis of landscape characteristics and their associated features and corresponding List of Classified Structures names and numbers, if applicable. It also includes an evaluation of whether the feature contributes to the property's National Register eligibility for the historic period (1917-1940), contributes to the property's historic character, or if it is noncontributing, undetermined, or managed as a cultural resource.

Landscape characteristics identified for the Acadia's carriage road system include natural systems and features, land use, vegetation, circulation, topography, buildings and structures, views and vistas, and small-scale features. Many of these characteristics have associated with them features that contribute to the site's overall historic significance and identity, as well features that do not contribute. The 1995 HAER drawings highlight some of the landscape characteristics and built features of the Jordan and Sargent Mountain Carriage Roads (Figure 18).

Landscape Characteristic Graphics:

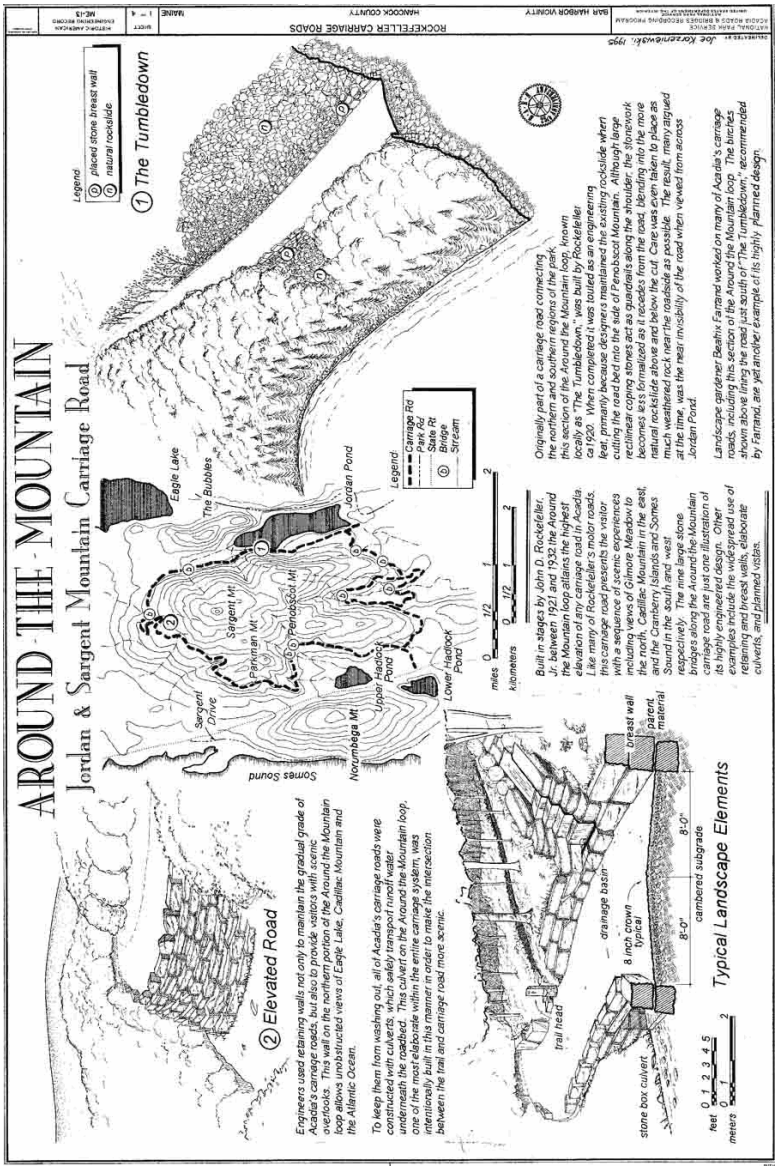


Figure 18. The Jordan and Sargent Mountain Carriage Roads. (HAER, ME-13, 1995)

Natural Systems and Features

Natural systems are those aspects that have influenced the development and physical form of the landscape, and include geomorphology, geology, climate, ecology, hydrology, and indigenous vegetation. Acadia's carriage roads were carefully planned and constructed to minimize their impact on Mount Desert Island's landscape and to highlight its many scenic views and diverse natural features. This intent became obscured as the condition of the carriage roads deteriorated and forest encroached on views and vistas, but was greatly improved during rehabilitation work in the 1990s. Natural systems and features for the Jordan and Sargent Mountain Carriage Roads are described below.

Historic Condition:
The rugged mountain peaks, woodlands, lakes, marshes, and coastlines of Acadia National Park and Mount Desert Island owe their present appearance to the last ice age that covered the region with thousands of feet of ice. In their retreat, the glaciers left scarred granite mountains interspersed with glacial lakes and U-shaped valleys littered with massive boulders and deposits of till. The product of these events is a landscape rich in ecological and biological diversity, one that supports 219 species of birds, 37 species of terrestrial mammals, 11 species of amphibians, 7 species of reptiles, 35 species of fish, and thousands of species of invertebrates. There is one federally listed threatened species – the bald eagle. The park also supports 1135 vascular plants, including 14 that are listed as endangered or threatened in Maine. (CLR 2007: 2)

In 1604, geographer and mapmaker Samuel de Champlain described "Isle des Monts Deserts" as a range of mountains with mostly rocky and treeless summits, and woods of pine, fir, and birch. Up until the mid-nineteenth century, European settlers, much like the Native Americans before them, depended on these natural resources for their livelihood. Consumed with hunting, fishing, farming, and logging, a viable livelihood associated with the island's scenery was unavailable to most residents. This changed when Hudson River School artist Thomas Cole arrived in 1844 to paint the island's scenic landscape. Other artists, writers, scientists, and the curious traveler followed, introducing the landscape to the larger public. By the turn of the twentieth century, Mount Desert Island was known as one of the most beautiful vacation spots in the country, especially for the wealthy who built massive homes in Bar Harbor and other towns to escape the hot summers in Boston, New York, and Philadelphia.

One such summer resident was John D. Rockefeller, Jr., who came to know and appreciate the island's unique landscape on carriage roads that he built on his property, beginning in 1913. In the decades that followed, Rockefeller worked with island residents and the National Park Service to expand these roads into a 57-mile system of motor-free routes that gave the public access the island's dramatic views and prominent natural features. Intent on preserving the landscape he admired, Rockefeller aligned the roads to follow the contours of the land and to take advantage of scenic views. Walls were built to preserve the line of the hillsides and save trees, while bridges arched across streams and around waterfalls, their walls and parapets designed to seemingly emerge from the adjacent rock outcrops. Native stone quarried on the island or salvaged during construction was used to build these structures, as well as for coping stones and culvert headwalls, so they would visually blend in with the surrounding landscape. Views of the island's lakes, ponds, and marshes were frequent along the carriage roads, and enhanced and framed by existing vegetation and from new plantings designed by landscape architect Beatrix Farrand (discussed in the Vegetation section).

While Rockefeller made great efforts to preserve existing vegetation, he was just as determined to remove fallen and decaying trees along the roadsides. With his own money, Rockefeller routinely directed work crews to walk the road corridors to achieve what he felt was a clean and manicured appearance in the adjacent woodlands.

Post-historic and Existing Conditions:
The 1947 fire consumed most of the forests in the northern and eastern areas of Mount Desert Island, leaving behind barren and erodible hillsides. Historic photographs show that by the early 1950s new forest vegetation had begun to take hold, and thanks in large part to Rockefeller's sponsorship of park-wide reforestation efforts, vegetation in burned areas was well on its way to reclaiming the formerly barren slopes by the late 1950s. It was around this time that park began to abandon the practice of removing of dead and downed vegetation in the forests, both for ecological and practical reasons.

After Rockefeller's death in 1960, the condition of the entire carriage road system began to decline due to inadequate funding for its maintenance, allowing vegetation to take hold in ditches and waterways, thus altering stormwater runoff and filling culverts with silt and debris. Forest growth continued across the island, and by the late 1980s had obscured most of the views and vistas, essentially creating a tunnel effect along the carriage roads.

The CLI Field School recorded general observations regarding natural systems and features (Figure 19). Historic path maps and current USGS maps of the island also provide good information about physical features, and Acadia's forests are thoroughly documented in the park's GIS database (Acadia NP, GIS: "veg1997final polygon"). An analysis of this information provided below indicates that Acadia's carriage roads still provide encounters with a wide variety of natural systems and features, and pass through forests diverse in composition and age. The orientation of the road and notable landforms, perennial and intermittent streams (abbreviated with a 'p' or 'i', respectively), and primary and secondary forest types along or directly adjacent to the road is also provided for each carriage road section where applicable.

Rugged mountain landforms dominate the Jordan and Sargent Mountain Carriage Roads. Nine road sections track around the middle and lower slopes of four connected mountains: Jordan (1,194 feet), Sargent (1,373), Parkman 941), and Cedar Swamp (942), and provide views and vistas of the mountainsides and across the island to the surrounding bays and ocean. Four other segments pass through the lower slopes formed by Little Harbor Brook in the Amphitheatre Valley and Jordan Stream that empties Jordan Pond. Overall, the landforms along the roads are characterized by hilly and steep terrain with frequent rock cuts, especially on the east slopes of Jordan and Sargent Mountains.

The carriage road segments that traverse the mid-western and mid-northern slopes of the mountains are primarily surrounded by spruce and fir trees. The roads on the lower east and south slopes of the mountains and the upper part of the Amphitheatre Valley pass through forests of spruce, fir, and mixed conifers and deciduous species. The roads that travel through the lower reaches of the valley are mostly white pines, mixed conifers, and mixed deciduous trees. Roads in the vicinity of the Jordan Pond dam and Jordan Stream pass through forests of spruce, fir, white pine, and mixed conifers and hardwoods.

[CR 10s-14]. Gradually curves north-south on steep terrain along the lower east slopes of

Sargent and Jordan Mountains, on the west side of Jordan Pond and a small valley and stream that drains into it; crosses Deer Brook (p) and two unnamed streams (i). The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is spruce-fir forest (mixed phase), spruce-fir forest (conifer phase), and mixed conifer-deciduous woodland; with beech-birch-maple forest and sparsely vegetated talus. A massive talus slope of tumbled rocks is one of the most unique natural features on the island.

[CR 12-10n]. Turns frequently heading southwest-northeast on steep terrain along the middle west and north slopes of Parkman and Sargent Mountains; crosses the head of Browns Brook (i) twice, near the head of two branches of Sargent Brook (i,p), Southwest Valley Stream (p), and Chasm Brook (p). The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is mixed conifer woodland and spruce-fir forest (mixed phase); with mixed conifer-deciduous woodland, aspen birch woodland/forest complex (shrubland phase), aspen birch woodland/forest complex (forest phase), aspen birch woodland/forest complex (woodland phase), beech-birch-maple forest, red oak woodland, and blueberry bald-summit shrubland complex.

[CR 13-12]. Turns frequently heading west-east on hilly terrain along a south-facing slope of Parkman Mountain. The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is mixed conifer woodland and spruce-fir forest (conifer phase), with spruce-fir forest (mixed phase).

[CR 14-15]. Gradually curves north-south on mostly flat terrain at the south end of Jordan Pond; crosses Jordan Stream (p) via a masonry bridge. The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is spruce-fir forest (conifer phase).

[CR 15-23]. Gradually curves north-south on hilly terrain alongside Jordan Stream; crosses Jordan Stream (p) twice via three wood bridges. The surrounding vegetation has created mostly closed and shady conditions on the road. Vegetation is white pine-hardwood forest; with spruce-fir forest (conifer phase) and spruce-fir forest (mixed phase).

[CR 16-15]. Gradually curves southeast-northwest on mostly flat terrain east of Jordan Stream (p). The surrounding vegetation has created mostly closed and shady conditions on the road. Vegetation is spruce-fir forest (conifer phase), with white pine-hardwood forest.

[CR 18-19]. Gradually curves west-east on hilly terrain around a low hill between the two Hadlock Ponds. The surrounding vegetation has created mostly closed and shady conditions on the road. Vegetation is spruce-fir forest (conifer phase) and spruce-fir forest (mixed phase).

[CR 19-12]. Gradually curves south-north on both hilly and steep terrain on the west slope of Cedar Swamp Mountain and then east-west along the south slope of Parkman Mountain; crosses Maple Spring Brook (i) and Hadlock Brook (i); and passes by a waterfall. The

surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is spruce-fir forest (conifer phase) and spruce-fir forest (mixed phase); with mixed conifer woodland, mixed conifer-deciduous woodland, and white pine-hardwood forest.

[CR 20-19]. Gradually curves east-west on steep slopes along the south side of Cedar Swamp Mountain; crosses unnamed stream (i) and is near another unnamed stream (i). The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is spruce-fir forest (mixed phase) and mixed conifer-deciduous woodland; with spruce-fir forest (conifer phase).

[CR 20-22]. Turns frequently heading west-east on hilly terrain through the lower portion of the Amphitheatre Valley; crosses Little Harbor Brook (p). The surrounding vegetation has created mostly closed and shady conditions on the road. Vegetation is spruce-fir forest (mixed phase), mixed conifer-deciduous woodland, and white pine-hardwood forest; with spruce-fir forest (conifer phase), mixed conifer woodland, white pine-mixed conifer forest, and beech-birch-maple forest.

[CR 21-14]. Gradually curves southwest-northeast on both hilly and steep terrain along the southeast slopes of Jordan Mountain; crosses a branch of Jordan Stream (i). The surrounding vegetation has created both open and sunny and closed and shady conditions on the road. Vegetation is spruce-fir forest (conifer phase), mixed conifer-deciduous woodland, and beech-birch-maple forest; with spruce-fir forest (mixed phase), mixed conifer woodland, and white pine-mixed conifer forest. There is also a talus slope of large tumbled rocks.

[CR 21-20]. Gradually curves east-west on both hilly and steep terrain through the upper portion of the Amphitheatre Valley; crosses two branches of Little Harbor Brook (i). The surrounding vegetation has created mostly closed and shady conditions on the road. Vegetation is mixed conifer-deciduous woodland and white pine-hardwood forest; with mixed conifer woodland, spruce-fir forest (mixed phase), white pine-mixed conifer forest, and beech-birch-maple forest.

[CR 21-22]. Gradually curves north-south on hilly terrain along the east side of the lower Amphitheatre Valley. The surrounding vegetation has created mostly open and sunny conditions on the road. Vegetation is mixed conifer woodland and white pine-mixed conifer forest; with spruce-fir forest (conifer phase).

Landscape Characteristic Graphics:

Figure 19. Talus slope on CR 10s-14. (Trip 2, ACAD CR 10s-14_17_talusslope, DSCN0818, SUNY-ESF, 2012)

Vegetation

Vegetation is introduced trees, shrubs, vines, groundcovers, and herbaceous materials. Planting designs by landscape architect Beatrix Farrand were installed to knit the new carriage roads, bridges, and gatehouses into the surrounding landscape, but much of her work was lost in the 1947 Bar Harbor fire. Natural regeneration, as well as reforestation projects implemented after the fire, eventually healed the landscape, but not at Farrand's level of detail and attention. Her work on Acadia's carriage roads is described below.

Historic Conditions:
The abundant and diverse vegetation on Mount Desert Island played a major role in the development of Acadia's carriage roads. Rockefeller believed that one way to ensure the carriage roads were as unobtrusive in the landscape as possible was to limit disturbances to the existing vegetation. This was accomplished in several ways: by aligning the roads with the contours of the land to minimize grading and vegetation removals, by preserving large trees alongside the roads wherever possible, and by replanting vegetation in areas scarred by construction.

New road construction necessarily resulted in areas of cut and fill along the roadways and around the bridges. When new plantings were needed, Rockefeller turned to Beatrix Farrand, a well-known and respected landscape architect and longtime resident on the island. Farrand would travel with Rockefeller's nurseryman Charles Miller over the roads, discussing plans with him and making notes on her recommendations. She, like Rockefeller, was meticulous in

her attention to detail. Their correspondences (and her accompanying notes) document a carefully planned, extensive planting design that framed important views, provided a setting for the gatehouses and bridges, and enhanced the experience of travelling along the roads. (HRS 1989: 298)

In areas where the views were limited and there was no bridge or natural feature to attract attention, Farrand used plants to create interest. New plants were used to fill the triangular spaces at road intersections, screen quarry sites, close old roads, and repair areas denuded by construction. Farrand spoke of this as "healing with plants," and in general recommended that, "...the more thickly the old roads and scars of roads are planted...the better the effect will be." Her planting designs relied primarily on native material, which she installed in masses or clumps if that was the way they naturally grew and in environments where they would thrive. Farrand' s advice was not limited to plantings; to solve a grading problem at the Jordan Pond Gatehouse, she recommended the construction of a low terrace wall that would also preserve a stand of trees between the lodge and the motor road. (HRS 1989: 67,204 citing Letter, Farrand to Rockefeller, 4 November 1930)

Enormous quantities of plants were used to complete this work, and large quantities of loam were brought in or saved from road construction. More than sixty varieties of trees, shrubs, perennials were selected, mostly native to the island, while others were primarily plants that had naturalized in the Northeast. The trees most frequently used were red maple, beech, oak, hornbeam, paper birch, yellow birch, white pine, pitch pine, spruce, hemlock, and cedar. Smaller trees and shrubs included elderberry, winterberry, shadblow, dogwood, wild rose, sweet fern, and witchhazel. Perennials and annual wildflowers and vines were used, such as clematis, honeysuckle, aster, iris, cardinal flower, and water lily. There were also blueberries, huckleberries, and blackberries. (Roberts 2012: 172-173)

As successful as Farrand's efforts were in maintaining and restoring the natural scene, they seemed to contrast with Rockefeller's practice of removing fallen and decaying trees along the roadsides, which was implemented even after road and bridge construction was completed and bare slopes were planted. With his own money, Rockefeller routinely directed work crews to walk the road corridors to maintain a clean and manicured appearance in the adjacent woodlands.

Post-historic and Existing Conditions (after 1940):
The 1947 fire consumed most of the forests in the northern and eastern areas of Mount Desert Island. According to Rieley and Brouse, the fire also destroyed all of Beatrix Farrand's plantings that were documented in her notes, except for small areas north of Eagle Lake, around Beaver Meadow Pool, and at Bubble Pond (plantings to the south at Stanley Brook survived). New forest began to take hold in the 1950s, thanks in large part to Rockefeller's sponsorship of park-wide reforestation efforts. Farrand's plantings that did survive presumably matured and naturalized, as was the intent.

Farrand did not prepare design drawings for the roadsides, bridges, and gatehouses, and instead staked out locations with Mr. Miller. The only information available comes from her road notes and correspondences, examples of which are offered in Appendix C of the 2012 book by Ann Rockefeller Roberts, in Appendix X of the 1989 report by William Rieley and Roxanne Brouse, and Appendix B of the 1995 report by Pressley Associates. An analysis of these sources, and additional research at the Rockefeller Archive Center in Tarrytown, New York, will be needed to determine the locations of Farrand's extant plantings.

Character-defining Features:

Feature: Farrand Plantings on Carriage Road System

Feature Identification Number: 166023

Type of Feature Contribution: Undetermined

Circulation

Circulation refers to the spaces, features, and applied material finishes that constitute a system of movement in a landscape. Topography is the three-dimensional configuration of the landscape surface characterized by slope and elevation. For Acadia's carriage roads, these characteristics together concern the physical design of the roads themselves: the materials that comprise the subgrade and surface; the width and length of the roads; and the changes to the island's topography that were needed to achieve the best routes. The carriage roads were built to the highest standards of the day and carefully located to showcase the island's scenic views while minimizing their effect on the landscape. Because of this careful planning and construction, they were able to withstand decades of neglect until rehabilitated in the 1990s. The circulation features for the Jordan and Sargent Mountain Carriage Roads are described below.

Historic Condition:
As Rieley and Brouse explain in the Historic Resource Study, Acadia's carriage roads are not "carriage paths" or "carriage trails." Rather, they are "roads" built to the highest standards of rural roads of the time. While brick roads were built in the nineteenth century and experiments with coal tar, bituminous, and concrete surfacing were underway during the first decade of the twentieth century, these represented only a small percentage of the total mileage of roads in 1913, when the building of the first segments of the carriage road system commenced. By this time, the great majority of roads being constructed in America fell into three categories: earth roads, gravel roads, and broken-stone roads. (HRS 1989: 250)

Earth roads were the least expensive and by far the most common type of road. However, they were dusty in dry weather and muddy in wet, and many were impassable during much of the year. Because of the temporary nature of earth roads, they were often converted to gravel or broken-stone as soon as finances and volume of traffic warranted. The best earth roads were built with properly formed and well-drained road beds so that their conversion to higher grade gravel or broken-stone roads required only upgrading the surface material. (HRS 1989: 250)

Gravel roads were intermediate, in both cost and durability, between earth roads and broken-stone roads. Gravel may be defined as "…a mass of small, more of less rounded fragments of stone which have been broken out and shaped by the action of water or ice." The depth of gravel would vary from 2 to 8 inches, depending on the frequency and weight of traffic, and would often be mixed with a binding material such as clay or rock dust to ensure that it would pack together tightly. Gravel roads were recommended for country roads having light traffic, for little used village streets, and for park roads. Historic photographs show gravel roads at numerous locations on Mount Desert Island at the turn of the century. (HRS 1989: 250,253, citing Baker 1913: 146)

The carriage roads at Acadia fall into the third category, broken-stone roads, the most durable and costliest of the three road types. Broken-stone roads are closely associated with the names of two Scottish engineers who greatly advanced the technology of road building in the late eighteenth and early nineteenth centuries: Thomas Telford and John Louden McAdam. Telford advocated a base layer of heavy foundation stones, 6 to 7 inches in depth, with smaller stones in the upper layers of the road. Central Park in New York contains nine and a half miles of "telford" roads built between 1869 and 1878. (HRS 1989: 253)

McAdam believed that the "telford" road was unnecessarily expensive and that the load-bearing capacity of the natural soil was adequate if properly surfaced and kept dry. McAdam prescribed a system of successive layers of relatively small stones (the largest passing a 2-inch ring, or no larger than would fit in a man's mouth). The final layer would consist of smaller stones which would pack together and provide a water-tight surface. The action of iron wagon and carriage wheels on the road would grind the stone into "fines" that would fill the voids between the stones and further compact the top layer of the road into a hard, impervious surface. (HRS 1989: 253)

The first "macadam" road in America was completed in Maryland in 1823, between Hagerstown and Boonsboro. It has been estimated that these new roads enabled a horse to triple its hauling power. During the nineteenth century, advances in technology obscured the differences between telford and macadam road building systems. The first mechanical rock crusher was invented by Eli Whitney Blake in 1858. About the same time, the revolving screen for assortment of various sizes of stone fragments was introduced. (Concrete bins, used in rock crushing and sorting operations at Rockefeller's Pocantico Hills estate are still extant.) The first use of the steam road roller was made on roads in Central Park on June 4, 1869. (HRS 1989: 253-254)

With this new technology, and with three-quarters of a century of practical experience and observation, civil engineers and road builders developed by the turn of the century a broken-stone road which combined the strong foundation and superior drainage of the telford road with the economy of the macadam road. The crusher and sorter allowed for the economical production of more uniform base stones and graded surface material. The steam

road roller greatly hastened the process of compacting the surface layer of stone and binder into a hard water-proof surface, which had previously relied upon much lighter horse rollers or simply wagon and carriage traffic to achieve. This macadamized road was described as "impervious to rain and so smooth and hard on the surface that the horses' hoofs would ring upon it." (HRS 1989: 254, citing Wixom 1975: 61)

While broken-stone roads were generally referred to as "macadam" during the nineteenth century, the same term is used now to describe "bituminous macadam" roads, in which asphalt or bituminous material is used as a binding agent between the surface stones. "Tarmac" is an abbreviation of "tar-macadam." For this reason, the construction technique of Acadia's carriage roads is described by either the term "broken-stone road," or by the term used by Rockefeller and the Simpsons: "rock-filled road." (HRS 1989: 254)

Acadia's Carriage Road Specifications.
Acadia's carriage roads were built according to plans and specifications developed by Charles P. Simpson, and later by his son Paul D. Simpson, under the direction of their employer, John D. Rockefeller, Jr. The first set of specifications that have been found for the carriage roads are from 1916 for the Gardiner-Mitchell Hill-Jordan Stream Road. These same specifications were amended only slightly for future carriage road projects on the island. As such, it is possible to establish many details about the original construction of the carriage roads. (HRS 1989: 256)

The specifications for the Little Harbor Brook Road from 1918 stated that, "the road to be built shall be what is known locally as a rock filled road, with a top surface of clay and bank gravel, such as may be found in the vicinity of the work or the finer grades of crushed rock may be substituted for gravel. In general the road is to be of the same character as the Sea Cliff Drive and the Gardiner-Mitchell Hill-Jordan Stream Road, to which reference is made as a standard for road bed, retaining wall, gutters, etc. The road shall be built true to line and grade as established on the ground by the engineer or as shown on plans, with no humps, hollows, yanks or crocks, and the lines, particularly on curves, shall be true and even. All wet and low places shall be filled with rock." (HRS 1989: 256, citing Specifications, 1918)

Reference to the plans in these specifications and other correspondence indicates that the road was carefully engineered and aligned both horizontally (plan) and vertically (profile). While civil engineers of the time were well acquainted with the principles of horizontal and vertical alignment, these were most commonly applied to railroad track alignment rather than to roads. Some park and estate roads were designed in plan and profile, but it was not common. (HRS 1989: 256)

Road builders of the early twentieth century were very concerned with gradient, or the steepness of the road. However, because of the slow rate of speed of both horse-drawn and motorized vehicles, sharp turns were allowed. A radius of as little as 30 feet at the outside edge of the roadway was recommended for four- and six-horse teams. For this reason,

horizontal alignment was not considered critical and was usually determined in the field by the construction crew "…requiring knowledge of the country and a good deal of common sense, but not much technical skill." The primary reason for designing a carefully aligned roadway on paper prior to construction, particularly in the case of a horse road, was to produce a beautiful, flowing line in the landscape. Aesthetic concern with respect to the carriage roads is confirmed by the specifications' requirement that "…the lines, particularly on curves, shall be true and even." Horizontal and vertical curves were calculated and shown on the plans, and "off-set" stakes were set in the field as the road was constructed to assure conformance with the design. (HRS 1989: 256, citing Cron 1959: 82)

The specifications stated that, "...the road shall be 16 feet in traveled width inside the gutters, fences or walls except where a greater or lesser width is specified, and will be crowned so as to be 8 inches higher in the center than at the edges." A 16-foot roadway in a rural area was a substantial width, at the time. The standard cross-section for state aid roads in New York showed 12 to 16 feet of broken-stone surface, at the turn of the century. While the majority of carriage roads were designed and built at the full 16-foot width, this was altered in some places by Rockefeller. A section of flat land along the brook on Little Harbor Brook Road was built 10 feet in width, with the possibility of upgrading later to 16 feet. The Jordan Stream Road, which is now considered a part of the carriage road system, was never so regarded by Rockefeller. It was designed and built as a 10-foot bridle path, and does not have the same alignment qualities as the true carriage roads. In addition, turnarounds were located along several road sections, which increased the road width. (HRS 1989: 257, citing Specifications, 1918)

The requirement for 8 inches of crown, from center line to the shoulder, or a rate of 1 inch per foot, was generous, but within the accepted norm. A 1903 road construction text states that "broken-stone roads made of soft stone and maintained by periodic repairs frequently have an original crown of one twelfth—an average slope of 1 inch to 1 foot or 1 in 12." The same source goes on to state that "there is a slight advantage of a very high crown for a broken-stone road, particularly for one that is not frequently cleaned. If the crown is great, the rains will better wash the surface clean. Dirt upon the surface is not only unsightly, but is also detrimental since it holds the water and softens the surface." (HRS 1989: 260, citing Baker 1913: 202)

The Little Harbor Brook Road specifications prescribed that, "This crowning [is] to be even and to be made in the rock fill and verified before the top surface is put on. In placing the rock fill due allowance must be made for settling and wear during construction so that the crown of the road when finished shall be 8 inches." However, later drawings indicate that the crown was reduced to 6 inches, or a crown of ¾ inch per foot. (HRS 1989: 260, citing Specifications, 1918)

Rieley and Brouse describe in detail what the specifications required for the road, comprised of foundation stones on the bottom (first layer of macadam), middle layers (second layer of

macadam), and finish surface and binder (see Historic Resource Study, pp. 260-265). Their research concluded that the depth of the foundation stone was greater than what was used in many American cities. The composition of the middle and finished layers were consistent with current practices at the time, but the use of clay instead of rock dust as a binder was not considered an ideal material due to its susceptibility to water and frost. Horse-drawn rollers were used to roll the surfaces of the early roads, but beginning around 1922 were replaced with heavier steam rollers. (HRS 1989: 260-265)

Carriage Road Routes and Destinations.
Roads are either built on fill or in cut, which necessarily requires disturbances to the landscape and alterations to the topography. As discussed earlier in the "Natural Systems and Features" section, Rockefeller and his engineers selected routes that followed the landforms and topography to not only highlight the existing landscape but to minimize the impact and presence of the road in the landscape. Fitting the road to the topography also created a pleasing curvature to the road and grades that were suitable for carriages. During the planning phase, areas where rock needed to be removed and where fill material would be available were carefully noted. In many places, the dimensions of the fill and cut slopes were reduced by the construction of retaining walls, which in turn helped reduce the overall width of the road corridor and preserve the surrounding vegetation. Although not frequently used, the locations of turnarounds may also have been determined by excess cut or fill.

A brief chronological history of the carriage road sections associated with the Jordan and Sargent Mountain Carriage Roads is provided below:

[CR 10s-14, CR 12-10n, CR 13-12, CR 19-12]. Four of the five sections of Jordan-Sargent Mountain Road, built 1922-1928 as a loop from the Asticou-Jordan Pond Road north around Jordan, Sargent, Parkman and Cedar Swamp Mountains. They also connected to Hadlock Brook Bridle Path and Aunt Betty Pond Road. Some of the best views, four impressive stone bridges, and the expansive rock tumbledown can be found along these roads.

[CR 14-15, CR 16-15, CR 18-19, CR 20-19]. Four of the five sections that comprised the first construction phase of Asticou-Jordan Pond Road, built 1918-1920 to link the village of Asticou near Northeast Harbor to the Jordan Pond House area. At the east end, CR 14-15 and CR 16-15 connected to Jordan-Sargent Mountain Road and Bubble Pond Road, via a bridge over Jordan Stream at Jordan dam. At the west end, CR 1-19, and CR 20-19 connected to Jordan-Sargent Mountain Road and the Hadlock Brook Bridle Path.

[CR 15-23]. The Jordan Stream Bridle Path was built in 1918 to link the Gardiner-Mitchell Hill-Jordan Stream Road and Asticou-Jordan Pond Road, via a route that crisscrossed Jordan Stream. The trail's 12-foot width was narrower than the carriage roads. The design of the wood bridge crossings were used on two other carriage roads around 1930. This was the first road built on Trustees land.

[CR 20-22]. The Little Harbor Brook Road was built 1918-1919 to link the new Asticou-Jordan Pond Road to Gardiner-Mitchell Hill-Jordan Stream Road on Rockefeller's property, via the lower elevations of the Amphitheatre Valley. It was built as an alternative to the sections of the Asticou-Jordan Pond Road that were planned through the Amphitheatre Valley but postponed until the early 1930s. The route featured a small bridge that served as a prototype for several other bridges on the system.

[CR 21-14, CR 21-20, CR 21-22]. The three road sections of the second construction phase of Asticou-Jordan Pond Road, built 1930-1932 through the upper elevations of the scenic Amphitheatre Valley. They were delayed until this time because of opposition from some summer residents as well as high construction costs of building in the valley and a scarcity of labor after World War I. When completed, the route featured three bridges and offered dramatic views to the south.

Post-historic and Existing Conditions (after 1940):
The carriage roads were meticulously maintained by Rockefeller and his crews until his death in 1960, after which management of the system became the responsibility of the National Park Service. Over the next three decades, park management objectives shifted to other priorities and funding for carriage road maintenance declined. Some sections remained in stable condition (e.g. the rock slide area on Jordan-Sargent Mountain Road) while others completely deteriorated (the Chasm Brook Bridge area on Jordan-Sargent Mountain Road). Road crowns were substantially lost on much of the system, which Rieley and Brouse theorized was most likely due to stones in the middle of the road gravitating toward the road edges over time. Most of the roads had also lost their surface and binder layer, deteriorating from their original hard and smooth surface to one of loose gravel. Along some carriage roads, problems were so bad that all three layers of the road (foundation, middle, and surface) were in need of replacement. (HRS 1989: 285-288)

In their rehabilitation plans, Rieley and Brouse recommended a variation of the surface and binder layer that would require less maintenance but still recapture the original appearance of the road. They also proposed reducing the crown from 8 inches as directed in the original specifications to 6 inches to accommodate modern construction and maintenance equipment and be more suitable for walkers and bicyclists. Major rehabilitation work on the carriage road surfaces was completed in the 1990s. (HRS 1989: 260,288-290)

The 2012 CLI Field School measured road widths at each culvert and noted areas of erosion on the road surfaces, edges, and shoulders. This information, along with the length and the most recent condition assessment (2008) from the List of Classified Structures for each carriage road section associated with the Jordan and Sargent Mountain Carriage Roads, is summarized below. Overall, the roads are in good condition with most sections experiencing isolated or scattered erosion problems.

[CR 10s-14]. Gravel road 2.0 miles long, average width 16.5 feet, good condition, some

surface erosion.
[CR 12-10n]. Gravel road 3.6 miles long, average width 16 feet, good condition, moderate surface erosion.
[CR 13-12]. Gravel road 0.3 miles long, average width 13 feet, good condition, moderate surface erosion.
[CR 14-15]. Gravel road 0.2 miles long, average width 15.5 feet, good condition, some surface erosion.
[CR 15-23]. Gravel road 0.6 miles long, average width 11 feet, good condition, some surface erosion.
[CR 16-15]. Gravel road 0.1 miles long, average width 18 feet, good condition.
[CR 18-19]. Gravel road 0.2 miles long, average width 17 feet, good condition.
[CR 19-12]. Gravel road 1.8 miles long, average width 16 feet, good condition, some surface erosion.
[CR 20-19]. Gravel road 0.9 miles long, average width 16 feet, good condition, moderate surface erosion.
[CR 20-22]. Gravel road 1.2 miles long, average width 17 feet, good condition, moderate surface erosion.
[CR 21-14]. Gravel road 1.0 miles long, average width 16.5 feet, good condition, some surface erosion.
[CR 21-20]. Gravel road 1.2 miles long, average width 16 feet, good condition, some surface erosion.
[CR 21-22]. Gravel road 0.4 miles long, average width 18 feet, good condition, some surface erosion.

Character-defining Features:

Feature: Carriage Road System, Section 10s-14 (CR 10s-14)

Feature Identification Number: 166025

Type of Feature Contribution: Contributing

IDLCS Number: 41023

Feature: Carriage Road System, Section 12-10n (CR 12-10n)

Feature Identification Number: 166027

Type of Feature Contribution: Contributing

IDLCS Number: 41022

Feature: Carriage Road System, Section 13-12 (CR 13-12)

Feature Identification Number: 166029

Type of Feature Contribution: Contributing

IDLCS Number: 41025

Feature: Carriage Road System, Section 14-15 (CR 14-15)

Feature Identification Number: 166031

Type of Feature Contribution: Contributing

IDLCS Number: 41029

Feature: Carriage Road System, Section 15-23 (CR 15-23)

Feature Identification Number: 166033

Type of Feature Contribution: Contributing

IDLCS Number: 41030

Feature: Carriage Road System, Section 16-15 (CR 16-15)

Feature Identification Number: 166035

Type of Feature Contribution: Contributing

IDLCS Number: 41031

Feature: Carriage Road System, Section 18-19 (CR 18-19)

Feature Identification Number: 166037

Type of Feature Contribution: Contributing

IDLCS Number: 41036

Feature: Carriage Road System, Section 19-12 (CR 19-12)

Feature Identification Number: 166039

Type of Feature Contribution: Contributing

IDLCS Number: 41035

Feature: Carriage Road System, Section 20-19 (CR 20-19)

Feature Identification Number: 166041

Type of Feature Contribution: Contributing

IDLCS Number: 41037

Feature: Carriage Road System, Section 20-22 (CR 20-22)

Feature Identification Number: 166043

Type of Feature Contribution: Contributing

IDLCS Number: 41040

Feature: Carriage Road System, Section 21-14 (CR 21-14)

Feature Identification Number: 166045

Type of Feature Contribution: Contributing

IDLCS Number: 41028

Feature: Carriage Road System, Section 21-20 (CR 21-20)

Feature Identification Number: 166047

Type of Feature Contribution: Contributing

IDLCS Number: 41038

Feature: Carriage Road System, Section 21-22 (CR 21-22)

Feature Identification Number: 166049

Type of Feature Contribution: Contributing

IDLCS Number: 41039

Buildings and Structures

Buildings and structures are the three-dimensional constructs such as houses, barns, garages, stables, bridges, and memorials. Acadia's carriage road system includes 2 gatehouses, 16 stone-faced bridges with concrete and steel cores, and 12 small steel and wood stringer bridges (the seventeenth bridge is on private property). The system also includes embankments and walls that support the road prism, substantial guardwall coping stones for visitor safety, and a system of ditches, waterways, and culverts to efficiently manage stormwater. Rockefeller's high standards of design and careful attention to detail ensured that all of these features seamlessly fit into the surrounding landscape. They were meticulously maintained during his lifetime, but then fell into disrepair until they were rehabilitated beginning in the 1990s. The building and structures present on the Jordan and Sargent Mountain Carriage Roads are described below.

Historic Condition:
Masonry Bridges.
Building Acadia's carriage road bridges started with the selection of the quarry, which was based on its proximity to the work site and the kind of stone it contained. Once the granite blocks were cut approximately to size, the stone cutters began the finishing work. Though it splits easily, granite is a hard stone and therefore difficult to work, especially when hand tools are used. The stone cutter would typically build a template based on the architect's drawings before cutting the stone to the shape and size required. On the drawing, each course would have been given a letter and the stones in each course then numbered from left to right, allowing for the exact placement of the stone by the masons. The stone was then hauled to the site and construction began. The masons used steel hammers to break and roughly shape the stones as they came from the quarry, with bush hammers generally used for finishing granite. (HRS 1989: 272)

While the stone was being quarried, the bridge site was being prepared for construction. After completing the necessary excavation, foundations and abutments were built, and for multiple span bridges, piers were built, too. With the substructure in place, construction of the arch itself began. The first step was building a temporary structure to support the stone or concrete until it was sufficiently strong. This "centering" consisted of timber trusses on struts, capped with a curved upper chord. Ribs were set in place on top of the chord and these ribs were in turn spanned by narrow planks or "laggings." The laggings formed the floor upon which the arch could be constructed. The centering's configuration, of course, varied from bridge to bridge, according to the shape of the arch. All but one (Bubble Pond) of Acadia's bridges were stone-faced structures with concrete cores. The voussoirs, or ring stones, were the placed first. If the barrel was to be faced with stone, the stones for the arch barrel were placed directly on top of the laggings. Then the steel reinforcement for the concrete was put in place and anchored to the stone work and the concrete was poured in the forms defined by the laggings and voussoirs. (HRS 1989: 272)

When the concrete had set, the surfaces were waterproofed with felt and hot pitch. To drain the bridge properly, pipes were placed parallel to the extrados and ending at outlets, or weep holes, in the piers or abutments. Next the spandrel wall was built and the barrel fill was placed, which meant filling the space from the arch ring to the road surface with earth and broken stones. The construction of the parapet walls then completed the bridge. After the installation of the roadbed itself (a 4-inch concrete slab with a surface of crushed stone), the raking and pointing of the masonry joints gave the bridges their finished appearance and sealed the masonry against moisture. (HRS 1989: 274)

The specifications which still exist for Hemlock, Waterfall, and Bubble Pond bridges verify that Rockefeller's bridge builders used this typical method of constructing stone-faced bridges with a concrete core. The work crews include laborers, helpers, stone-cutters, masons, and blacksmiths. (HRS 1989: 274)

Masonry bridges associated with the Jordan and Sargent Mountain Carriage Roads are as follows:

[CR 10s-14].
Deer Brook Bridge is located on Jordan-Sargent Mountain Road [CR 10s-14]. Early in 1925, Rockefeller began a new phase of construction on the west side of Eagle Lake, continuing south along the west side of Jordan Pond. A few hundred feet north of the rock slide area along this road, a bridge was required where the road would cross Deer Brook. Rockefeller asked architect William Bosworth to prepare drawings for this bridge. As originally designed, Deer Brook Bridge had a bronze medallion with a deer's head centered in the spandrel wall between two narrow arches. Perhaps because the National Park Service raised an objection to this design, or because of a miscommunication about the deer's head being carved out of stone, the design of the medallion was changed to simple circular stone carved with the date. (VHB 1994: 63)

Deer Brook Bridge was the first bridge for Rockefeller sought the approval of the National Park Service, since he was building on park land. Chief Landscape Architect Daniel R. Hull approved plans for the bridge in May 1925. As Waterfall Bridge was nearing completion, construction began on Deer Brook Bridge. Engineer Charles Simpson and contractor Samuel Candage proposed the use of "dark and old looking seam-faced stone" available in a quarry near the bridge. Rockefeller sent back the following instructions to Candage: "Please instruct the stone cutters to make the stonework even rougher if anything than that of the last bridge. The more rustic the bridge is in appearance the better. Your men usually err on the other side and will need constant coaching from you in order not to do too nice and refined a job." The bridge was completed in 1925 at a cost of $24,918. As Simpson and Candage had suggested, the stone is very dark and old-looking, but in spite of Rockefeller's urgings, the stones were laid in semi-coursed fashion, giving the bridge a somewhat refined appearance, although perhaps less refined than the Hemlock and Waterfall bridges. (VHB 1994: 63)

[CR 12-10n].
Chasm Brook Bridge is located along Jordan-Sargent Mountain Road [CR 12-10n]. Designed by architect William Bosworth and built by B.W. Candage & Sons, the plans for this bridge had to be approved by the National Park Service, as the bridge was to be built on park property. Its design was similar to the earlier segmental arch bridges at Little Harbor Brook (1919) and Jordan Pond Dam (1920), but also incorporated the parapet details and spiraled endposts of the Hemlock (1924) and Waterfall (1925) bridges. (VHB 1994: 88)

This bridge was planned at the same time as the Hadlock Brook Small Stone Bridge, and along with his request for estimates, Rockefeller wrote to Candage: "Please send me, at your convenience, an estimate of the cost of each of these bridges, which as we have talked are to be built of the seam-faced granite from your quarry. It is highly important that both bridges should be built of split stone, rather than tool-edged stone…It is not necessary that the joints should be all the same, but exceedingly desirable that the most rustic appearance should be given to both bridges. As I pointed out to you, this is the only respect in which you have not been successful in the large bridges which you have built during the past two or three years…I am counting upon your taking steps to prevent [your men] doing again such 'good work' as they would call it, but work which is not so artistic from my point of view." Candage's attention to this matter is evident at Chasm Brook Bridge, where the stones have a more rustic appearance than the Hemlock and Waterfall bridges. Chasm Brook Bridge was constructed in 1926 at a cost of $15,202.64. (VHB 1994: 88)

[CR 14-15].
Jordan Pond Dam Bridge (Jordan Stream Bridge) is located on Asticou-Jordan Pond Road [CR 14-15]. By October 1919, work was underway on the final segment of the carriage road between Brown Mountain Road and Jordan Pond. A bridge was required at the point where the road would cross Jordan Stream at the southwest comer of Jordan Pond. Rockefeller wrote to contractor Samuel W. Candage, indicating that he wished to duplicate the design of

the Little Harbor Brook Bridge, built the previous year: "...if you could make this bridge an exact duplicate of the Little Harbor Brook Bridge, in every respect except your inability to get the weathered color on the stone, I should regard it as most successful..." Both bridges were patterned after the Gap Stowe Bridge Rockefeller had admired in Central Park. Jordan Pond Dam Bridge was completed in 1920 at a cost of $2,375.11. (VHB 1994: 44)

While Mr. Rockefeller requested that the masons make the stonework more irregular and rustic in appearance than Little Harbor Brook Bridge, and despite the fact that the contractors used the same set of drawings and specifications for both bridges, the Jordan Pond Dam Bridge is more finished in appearance than the earlier bridge. The stones are more uniformly sized and laid in a semi-coursed, rather than random, pattern. The issue of making the bridges more irregular and rustic in appearance would continue to be an ongoing source of frustration for Rockefeller. (VHB 1994: 44)

[CR 19-12] (two bridges).
Hemlock Bridge (Maple Spring Bridge) is located on Jordan-Sargent Mountain Road [CR 19-12]. In 1922, construction began on a road from Brown Mountain Highway around the west side of Sargent Mountain. Two bridges located one tenth of a mile apart, Hemlock Bridge and Waterfall Bridge, were required for this route, where the road crossed two streams forming Upper Hadlock Brook. Architect William Bosworth drew up plans for the bridges and Samuel Candage completed the construction. These two bridges were specifically designed to take advantage of the dramatic topography at each location. The bridges are similar in scale, materials, and overall design, but differ in their detailing: both are curved in plan with their parapet walls terminating in scrolled endposts, both contain a large arch flanked by major architectural details, and both are constructed of ashlar granite. However, the details of the two bridges contrast a Gothic arch flanked by smaller false Gothic arches at Hemlock Bridge, with a semi-circular arch flanked by semi-circular turrets at Waterfall Bridge. (VHB 1994: 52)

The construction of these bridges, between 1924 and 1925, was a difficult and expensive process. Getting the necessary stone to the site proved to be a challenge, to the extent that serious consideration was given to constructing the bridges entirely of concrete. Rockefeller's aesthetic sensibility prevailed in the end, and Hemlock Bridge was constructed of quarried granite, but at tremendous cost. The original estimate was $42,120, but the final cost was $58,619.80 when completed in 1924. (VHB 1994: 52)

Waterfall Bridge (Upper Hadlock Brook Bridge) is located on Jordan-Sargent Mountain Road [CR 19-12]. This bridge, along with Hemlock Bridge, was one of two bridges required along the carriage road from Brown Mountain Highway around the west side of Sargent Mountain. The two bridges were located just one-tenth of a mile apart, and are similar in scale, materials, and overall design. Architect William Bosworth designed both bridges, and contractor Samuel Candage oversaw their construction. Both bridges were designed to take advantage of the dramatic scenery at each location. (VHB 1994: 63)

Shortly after Hemlock Bridge was completed in 1924, construction began on Waterfall Bridge, just to the southeast. Due to the large cost overrun on Hemlock Bridge, some changes were made in planning and constructing Waterfall Bridge. These included: making coarser mortar joints, thereby decreasing the cost of stone cutting and laying; suspending work during the winter months; and using better equipment to eliminate unnecessary hand labor. In spite of the contractor's optimistic predictions, construction of Waterfall Bridge exceeded the estimate by nearly 25 percent. Waterfall Bridge was completed in 1925 at a cost of $44,103.81. (VHB 1994: 63)

[CR 21-14] (two bridges).
West Branch Jordan Stream Bridge is located on Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-14]. This bridge, along with Amphitheatre Bridge and Cliffside Bridge, was one of three bridges constructed on the road. The road was surveyed and engineered by Paul Simpson, who sent his notes to Charles Stoughton to refer to when designing the bridges. The bridge design was based on a bridge in Central Park, which engineer Charles Simpson had seen when he was examining the Gap Stowe Bridge ten years earlier. Although the bridge in Central Park is a footbridge, and thus built to a smaller scale, the West Branch Jordan Stream Bridge clearly derives its narrow Roman arch and solid parapet walls from the Central Park structure. The bridge was constructed in 1931, at a cost of $16,889.29. This bridge and the Amphitheatre Bridge (1931) were finished first, followed by Cliffside Bridge (1932). (VHB 1994: 118)

Cliffside Bridge is also located on Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-14]. The design of Cliffside Bridge was apparently the brainstorm of Superintendent George Dorr who, with Charles Simpson, had examined the site a decade prior to construction of the bridge. At that time, Dorr had written to Rockefeller: "…I have spent a great deal of time at this point and think the difficulty can be solved by making a direct, wide-angled approach to the shelf, continuing the general road-line from the east, and building an arch against the cliff which would span the foot path, instead of making a solid fill...Such an arch...might be made a feature of interest and beauty and would leave the continuity of the cliff—itself a feature of great interest—as well as of the climb unbroken."

After construction of this carriage road recommenced in 1930, Charles Stoughton drew up plans for this bridge. It was constructed in 1932, and Rockefeller commented: "…I think the half arch bridge a most robust, interesting and handsome structure, and am much pleased with it. It is different and very attractive." This bridge was the middle and last built of the three required along this road, the others being West Branch Jordan Stream Bridge (1931) to the east and Amphitheatre Bridge (1931) to the west. (VHB 1994: 125)

[CR 20-22].
Little Harbor Brook Bridge is located on Little Harbor Brook Road [CR 20-22]. On August 5, 1918, Rockefeller wrote to architect William Bosworth requesting a design for a bridge, the second to be built along the carriage roads, for a section of carriage road connecting Jordan

Pond with Brown Mountain Road: "Will you please suggest a design of a masonry type bridge, with a concrete core, the same as the one you designed before [the Cobblestone Bridge], but adapted to a much smaller stream, and of a much less important roadway?" Bosworth sent back a design for a small, rustic bridge with a segmental arch and a parapet comprised of abutting boulders giving the effect of the coping stones which lined the carriage roads. In March 1919, while work was proceeding on the new road, Rockefeller changed his mind about the bridge plan, and wrote to engineer Charles Simpson regarding a small stone bridge he had seen in Central Park, the Gap Stowe Bridge spanning Swan Lake. After a trip to New York to inspect this bridge, Simpson and Bosworth developed a new set of plans and specifications. Little Harbor Brook Bridge was constructed in 1919 at a cost of $2,843.08. (VHB 1994: 39)

In its final form, Little Harbor Brook Bridge is very similar in appearance to the bridge in Central Park, but is slightly more refined and has a lower arch. This design was so successful, it was used for two other small bridges on the carriage roads, the Jordan Pond Dam Bridge (1920) and Hadlock Brook Small Stone Bridge (1926). These three bridges are nearly identical in appearance, except for minor differences in dimensions and detailing. The contractor for the bridge was B.W. Candage & Son, who had earlier done extensive masonry work at The Eyrie. (VHB 1994: 39)

[CR 21-20].
Amphitheatre Bridge is located on Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-20]. In 1930, work recommenced on the Amphitheatre Road, abandoned ten years earlier because of the objections of summer residents. Two other bridges were required along this road, West Branch Jordan Stream Bridge (1931) and Cliffside Bridge (1932). Charles Stoughton drew up plans for Amphitheatre Bridge early in 1931. (VHB 1994: 113)

Regarding the construction of this bridge, Stoughton and Paul Simpson discussed several issues with Rockefeller, including saving two large trees near the bridge, building the bridge wider than the usual 16-foot width, and locating the arch to pleasingly frame the waterfall. In the end, each of these issues was dealt with. The trees were saved, the bridge was constructed with a 20-foot wide roadway, and the arch was skewed to frame the waterfall. At 245 feet, the Amphitheatre Bridge has the distinction of being the longest of the carriage road bridges. It was constructed in 1931. (VHB 1994: 113)

Wood Bridges.
Rockefeller also included rustic wood bridges in his carriage road system—on the Jordan Stream bridle path, the carriage road on the east side of Eagle Lake, and the road between Gilmore Meadow and the Chasm Brook bridge. This style of bridge, which he discussed with Beatrix Farrand, was also used on the roads of his Pocantico estate. Rockefeller described their construction as follows:
"...we were enthusiastically of the opinion that two wooden bridges with rustic cedar rails—the bridges to be built on stone or concrete piers with heavy steel beams under the planking—would be by far the most appropriate type of construction for the place [north end of Eagle

Lake]. Neither the masonry nor the steel would show, only the planks and the rustic rail…not interfering at all with the present rustic appearance of the stream and its immediate surroundings. These bridges can be made quite as strong as stone bridges; we have used them successfully on the Jordan Stream bridle path and they seem to us by far the most appropriate in the cedar swamp where the stream is crossed; and finally, their cost will be relatively so slight that at any future time they could be replaced by stone bridges if they had not proved satisfactory." (HRS 1989: 275, citing Letter, Rockefeller to Farrand, 16 May 1929)

Farrand agreed, offering only one suggestion that Rockefeller would adopt:
"...[a] suggestion is that the rails be made of adze-hewn timber not cedar poles. Personally I think that the cedar poles quickly lose their bark and look shabby and unkempt after the first year or two. Adze-hewn timbers are entirely appropriate to country bridges as they have been used for a great many hundreds of years…" (HRS 1989: 275-276, citing Letter, Farrand to Rockefeller, 22 May 1929)

Wood bridges associated with the Jordan and Sargent Mountain Carriage Roads are as follows:

[CR 15-23] (3 bridges).
The Jordan Stream Little Bridges #s 1-3 are located on the Jordan Stream Bridle Path [CR 15-23]. Built between 1918 and 1919, they were the first of the small rustic steel stringer bridges to be constructed on the carriage road system. The bridges allow passage across Jordan Stream. The other rustic bridges are on Eagle Lake Road (East), built 1929-1930, and Aunt Betty Pond Road, built 1930-1931. (VHB 1994: 152; LCS 2013: Br42S, Br43S, Br44S)

Walls and Embankments.
When roads are built on a hillside, it is typical to create the relatively level cross-section of the road's surface by cutting soil (or rock) away on the uphill side, and filling on the downhill side. The embankments, or side slopes, necessary to meet the original grade typically requires the removal of trees for some distance on both the uphill and downhill side of the road. On Acadia' s carriage roads, the size of the embankment was minimized by installing breast walls on the uphill side of the road and retaining walls on the downhill side. By using these walls, the roads could be built with a much narrower path of disturbance. (HRS 1989: 50-51)

All of the walls along Acadia's carriage roads were constructed with locally quarried stone. The stones were generally 6-12 inches in thickness, up to 4 feet in length, and orthogonal in shape, although some smaller and shorter sections of wall also made use of rounded stones. Most of the walls were constructed with stones dry laid in horizontal yet random courses, while some featured much larger single stones. The walls were designed to have a 1-1/2 inch per foot batter (or vertical slope) and be 18 inches thick at the top. The engineer was given broad authority to direct the extent and location of the walls. Rockefeller felt that the use of quarried stone readily available from the construction process in the walls would be more cost effective and in time would weather and likely become hidden by vegetation. (HRS 1989: 52, 111-112,270)

In a few areas, stone embankments were also built to support the roadway. Stones were placed along fill slopes to help prevent the slope from eroding. Vegetation was often allowed and encouraged to grow in these areas. Whereas walls structures were vertical in cross-section, embankments had less of a batter and extended horizontally out from the roadway. There are no construction details regarding the use of embankments, which like the walls, were likely installed at the discretion of the engineer.

Guardwalls (Coping Stones).
Large stones were set alongside the road edges to function as guardrails. They were to be used for safety wherever necessary, such as places where the adjacent road bed sloped down, on top of embankments and retaining walls, or at culvert inlets and outlets. Specifications for the carriage roads described their installation, which was to be about one foot apart, depending on the shape of the stone. To place the stones, the teeth of stone tongs, or "dogs," were set into indentations drilled on each side of the stones. The stones were then lifted into place with a derrick. They were also not to be set in a line, but at irregular angles to create a rustic appearance, a technique that was implemented on the carriage roads at Pocantico Hills. Prior to Rockefeller's involvement in road construction on the island, the preferred guardrail treatment had been a fence of round cedar poles. (HRS 1989: 47,292-293)

As with the wall stones, Rockefeller believed that using broken and quarried stones from the road building process would provide a sufficient and cost effective quantity of material that would also weather to a more natural appearance. He also felt that the spacing of greater than one foot between the stones would not be or feel as safe to the public. Over time, the coping stones came to be known as "Rockefeller's teeth." (HRS 1989: 111-112)

Ditches, Waterways, and Culverts.
In 1935, Rockefeller wrote to Superintendent George Dorr that "my experience in road building has been that the greatest economy in maintenance is obtained by the greatest care and thoroughness in designing and constructing the drainage system." This conviction was evident in the specifications for the drainage system of the carriage roads, which stated in part that the gutters [waterways] were to be at least 2 feet in width and deep enough to carry off the water. (HRS 1989: 268-269, citing Letter, Rockefeller to Dorr, 21 August 1935)

Ditches and waterways collected runoff from the roadway and surrounding slopes and directed it to culverts that passed under the road. A majority of the ditches were trapezoidal-shaped earthen channels that in time were concealed with mosses, ferns, and other groundcover plants. Along some road sections, this vegetation spread onto the roadway surfaces. If ditch lines were located in areas with steep topography or where the volume of groundwater or stormwater was higher, the ditches were constructed as stone waterways. Culverts were designed at frequent intervals to prevent the concentration of runoff, and to interrupt the natural drainage pattern as little as possible. The ditches and waterways ran parallel to and below the grade of the roadways. In some areas, there were ditches and waterways in slopes above the

roadways to intercept and direct runoff into the ditches and waterways along the road.

The construction of the culverts was to be of stone or of iron pipe. If iron, they were to be at least 10 inches in diameter (this was upgraded in 1922 to 12 inches). Stone culverts were preferred and iron culverts were to be used only where there was insufficient depth for a stone culvert. Stone or concrete head walls were specified for both ends of all metal pipes. A catch basin was to be built at the entrance to each culvert, at least 18 inches square, with its bottom at least a foot below the bottom of the culvert "so as to form a receptacle for leaves and debris and prevent the stopping up of the culvert." This kind of catch basin was built into the drainage systems of many cities and urban parks, but it was, and still is, very uncommon on rural roads. (HRS 1989: 269-270, citing Specifications, Little Harbor Brook Road: 5)

Stone culverts were preferred for practical as well as aesthetic reasons. "If a ditch drains a hillside having a southern exposure, the midday sun of winter will supply a trickle of water which will freeze at night, and under this condition such pipe culverts will soon freeze solid, and sometimes burst...Box culverts of rubble masonry...are much preferable to pipes, being less ready to freeze and less liable to be damaged if frozen." That this condition was a real concern on the carriage roads is evident in S.F. Ralston's letter to Rockefeller in 1925:
"I went over the roads after the heavy rain fall to try and determine the cause of the damage, and found in most instances that the culverts were entirely closed with ice, some places for the entire length of the culvert. It rained many times during the winter when it was but a few degrees above the freezing point, and the rains were almost always followed by freezing temperatures, sometimes after it quit raining, the temperature fell to zero and at times to 6 and 8 degrees below zero, and the water running into the culverts, which were surrounded by frozen ground, and the frost in the culverts and the lowering temperature gradually filled them with ice. It was a condition that could not be guarded against." (HRS 1989: 269, citing Judson 1909: 36; Letter, Ralston to Rockefeller, 14 April 1925)

Post-historic and Existing Conditions (after 1940):
Masonry Bridges.
The 17 masonry bridges on the historic motor road system are still present, and the 16 that are within the park's boundaries were evaluated in 2008 on the List of Classified Structures as being in good condition. However, after Rockefeller's death the condition of many bridges worsened and developed evidence of efflorescence, surface staining, and mortar failure. The main cause of deterioration in stone, mortar, and reinforced concrete bridges is the gradual infiltration of water caused by, among other reasons, an accumulation of material that clogs drainage systems, or erosion of the deck surface that changes the grading and creates surface depressions that collect water. An analysis of all of the bridges was undertaken for the 1994 report, "Historic Bridge Reconnaissance Survey: Carriage Road System, Acadia National Park." The bridges were rehabilitated in the 2000s. (HRS 1989: 297,314)

The 2012 CLI Field School inventoried masonry bridges on the carriage road sections associated with the Jordan and Sargent Mountain Carriage Roads (Figures 20-21). The

following descriptions are extracted from the List of Classified Structures.

[CR 10s-14].
Deer Brook Bridge is a reinforced-concrete bridge (78 feet long, 22 feet 5 inches at highest) clad with quarry-faced, random-coursed ashlar granite. The bridge carries the Jordan-Sargent Mountain Road [CR 10s-14] over Deer Brook at a waterfall near the north end of Jordon Pond. It has two narrow (9 feet 8 inches) semicircular arches that are separated by a 6-foot wide pier and outlined by slender radiating voussoirs. A circular granite medallion (4-foot diameter) located above the pier on the east facade is inscribed with the 1925 construction date. Both elevations display two slightly projecting belt courses. The bridge was rehabilitated in 2004. (LCS 2013: Br9S)

[CR 12-10n].
Chasm Brook Bridge is a small rustic masonry arch bridge (54 feet long, 25 feet at highest) that is constructed of reinforced concrete and clad with quarry-faced random-laid ashlar granite. The bridge carries Jordan-Sargent Mountain Road [CR 12-10n] over Chasm Falls. The segmental arch (28-foot 8-inch span) springs from the rock ledges and has slender radiating voussoirs and keystones. The parapet walls, topped with large squared capstones, arch upward toward center of bridge and terminate in scrolled endposts, or "curtails." (LCS 2013: Br24S)

[CR 14-15].
Jordan Pond Dam Bridge (Jordan Stream Bridge) reinforced-concrete arch (41 feet 6 inches long, 10 feet 5 inches at highest) faced with semi-coursed cut granite, except on the underside of the arch where the concrete is exposed. The bridge carries Asticou-Jordan Pond Road [CR 14-15] across Jordan Stream adjacent to a small dam at the southwest corner of Jordan Pond. The segmental arch (19 feet wide) has arched parapet walls topped with alternating single and paired granite capstones and flanked by squared, battered piers with pyramidal capstones. A datestone inscribed with the 1920 construction date is incorporated into the north parapet wall, and wingwalls flare out slightly at the ends and have ornamental scuppers. The bridge was rehabilitated in 2004. (LCS 2013: Br22S)

[CR 19-12] (two bridges).
Hemlock Bridge (Maple Spring Bridge) is a massive (200 feet long, 35 feet at highest) masonry Gothic-arched bridge of reinforced concrete clad with granite ashlar. The bridge curves in plan to carry the Jordan-Sargent Mountain Road [CR 19-12] over a deep rocky ravine carved by Maple Spring Brook. The main arch (37-foot span) has a ring of radiating granite voissoirs that increase in size from keystone to springline. The arch is flanked by smaller blind Gothic arches on the south facade. Parapet walls are topped with large projecting capstones and terminate in scrolled endings, or "curtails." The bridge was rehabilitated in 2004. (LCS 2013: Br14S)

Waterfall Bridge (Upper Hadlock Brook Bridge) is a long (120 feet long, 31 feet at highest) masonry arch bridge constructed of random-coursed ashlar granite over reinforced concrete. Skewed and curved to fit the topography, the bridge carries the Jordan-Sargent Mountain Road

[CR 19-12] over Upper Hadlock Brook at a 40-foot high waterfall. The semicircular arch (26 feet wide) has a ring of 30 quarry-faced radiating voussoirs. A pair of turrets/lookouts semicircular in plan flank the arch. Flattened-arch parapet walls have large projecting granite capstones and terminate in scrolled endings or "curtails." The bridge was rehabilitated in 2004. (LCS 2013: Br15S)

[CR 20-22].
Little Harbor Brook Bridge is a reinforced-concrete segmental-arch bridge (41 feet 6 inches long, 10 feet 4 inches at highest) clad with random-laid cut granite, except on the underside of the arch where concrete is visible. The arch (18-foot, 10-inch span), which has radiating voissoirs, carries Little Harbor Brook Road [CR 20-22] over the shallow and rocky Little Harbor Brook deep in the woods. Arched parapet walls are topped with alternating single and paired capstones and are flanked by square battered piers with pyramidal capstones. A datestone inscribed with the 1919 construction date is incorporated into the southwest pier, and the wingwalls have functional/ ornamental scuppers. The bridge was rehabilitated in 2004. (LCS 2013: Br40S)

[CR 21-14] (two bridges).
West Branch Jordan Stream Bridge is a curved-plan reinforced-concrete structure (115 feet long, 22 feet 3 inches at highest) clad with quarry-faced ashlar granite in a semi-coursed pattern of large and small stones. The bridge carries the Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-14] over the west branch of Jordan Stream. A narrow (6 feet) Roman arch has slender radiating voussoirs with a prominent keystone. The parapet walls have alternating square/rectangular capstones and rectangular endposts. The bridge was rehabilitated in 2004. (LCS 2013: Br7S)

Cliffside Bridge is a masonry arch bridge (250 feet long, 29 feet at highest), constructed of reinforced concrete clad in quarry-faced random-laid ashlar granite, except on the underside of the arch where concrete is visible. The bridge carries Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-14] across the Jordan Ravine on the flank of Jordan Mountain. Asymmetrical in plan and elevation, the segmental arch (50-foot span) is outlined with slender radiating voussoirs that spring from natural rock ledge. The parapet walls are crenelated with a pattern of horizontal and vertical capstones, with the west parapet wall set into the side of the hill except directly above the arch. There are battered lookout towers on either side of arch: the north tower is 22 feet high and has large a projecting stone scupper, the south tower is 13 feet high and has a stone inscribed with the 1932 construction date on the inner parapet wall. At the north end of the bridge, two tower-like vertical forms project from the outer face. The bridge was rehabilitated in 2004. (LCS 2013: Br11S)

[CR 21-20].
Amphitheatre Bridge is a masonry-arch bridge (245 feet long, 27 feet at highest) constructed of quarry-faced, random-coursed ashlar granite over a reinforced-concrete substructure. The bridge carries Amphitheatre Road (Asticou-Jordan Pond Road) [CR 21-20] near the Little

Harbor Brook waterfall. The skewed segmental arch (32-foot span), which has uneven radiating voussoirs, was designed to frame the waterfall. The bridge is asymmetrically curved in plan, with the walls flaring at the ends. Each elevation displays two vertical rows of large projecting rectangular blocks. The parapet walls gradually slope to a peak above the arch and are pierced with horizontal rectangular openings below heavy capstones with dressed edges. A turret with a viewing balcony overlooks the bridge and ravine at the east end of the south parapet wall. The bridge was rehabilitated in 2004. (LCS 2013: Br16S)

Wood Bridges.
Due to their materials, the rustic wood bridges were in poor condition prior to the rehabilitation project, but were evaluated in 2008 on the List of Classified Structures as being in good condition. The CLI Field School inventoried wood bridges on the carriage road sections associated with the Jordan and Sargent Mountain Carriage Roads (Figure 22). The following descriptions are extracted from the List of Classified Structures.

[CR 15-23].
Jordon Stream Little Bridges #1-3 are small rustic bridges that span Jordan Stream on the Jordan Stream Bridle Path [CR 15-23]. The bridges were repaired in 1948, rehabilitated in 1991, and reconstructed in 1998 to replicate their original appearances. Dry-laid granite abutments support steel I-beam stringers and 2x8-inch wood plank decking. Timber railings consist of three posts braced with outriggers, top rails, and inclined endposts pinned to large boulders. For identification purposes, the bridges have been assigned consecutive numbers, #1 and #2 at the southern end of the road, and #3 at the northern end. Bridge #1 is 9 feet 7 inches long, Bridge #2 is 8 feet 4 inches long, and Bridge #3 is 13 feet 3 inches long. One of the railing posts on Bridge #3 is cracked. (LCS 2013: Br42S, Br43S, Br44S)

Walls and Embankments.
As maintenance of the carriage roads declined after Rockefeller's death, some of the retaining walls began to fail, caused in part by a combination of recurrent freezing and thawing cycles, failures of adjacent drainage systems, and the growth of vegetation within or adjacent to the structures. Most of the walls were repaired during the rehabilitation work in the 1990s. Some embankments also became overgrown, although this was the desired intent except in places where there were views.

The 2012 CLI Field School inventoried stone walls and stone embankments (Figure 23). The two types of structures were differentiated as follows: walls had batters less than 45 degrees and were constructed with either dry laid or mortared stone, while embankments had batters greater than 45 degrees and were built with dry laid stones. Earthen and vegetated embankments were not inventoried, and the team reported that portions and perhaps entire stone embankments were likely hidden by vegetation. Stone walls were found on both fill and cut slopes, while stone embankments were only on fill slopes.

Walls and embankments on the carriage road sections associated with the Jordan and Sargent

Mountain Carriage Roads are summarized below. Due to the hilly to steep terrain, 51 walls were found on these roads, all of which feature dry laid stone construction with weathered stones occasionally interspersed with mosses and other small plants. Thirty-six stone embankments were inventoried. The walls and embankments are original structural components of the carriage roads and are therefore contributing features.

[CR 10s-14]. 8 walls, all dry laid stone; 0 embankments
[CR 12-10n]. 2 walls, all dry laid stone; 18 embankments
[CR 13-12]. 1 wall, dry laid stone; 2 embankments
[CR 14-15]. 0 walls; 2 embankments
[CR 15-23]. 3 walls, all dry laid stone; 0 embankments
[CR 16-15]. 1 wall, dry laid stone; 0 embankments
[CR 18-19]. 0 walls; 0 embankments
[CR 19-12]. 8 walls, all dry laid stone; 9 embankments
[CR 20-19]. 5 walls, all dry laid stone; 0 embankments
[CR 20-22]. 4 walls, all dry laid stone; 0 embankments
[CR 21-14]. 5 walls, all dry laid stone; 0 embankments
[CR 21-20]. 14 walls, all dry laid stone; 5 embankments
[CR 21-22]. 0 walls; 0 embankments

Guardwalls (Coping Stones).
When rehabilitation work began, most of the coping stones on the carriage roads still remained where they had been placed, although a significant number of stones had become dislodged or shifted from their original locations. Some had tumbled down the slopes they were intended to mark. In other instances, ridges of material had accumulated in front of the stones, diverting runoff over the road surface rather than between the stones as originally designed. The carriage road rehabilitation projects addressed these problems, but they still require periodic maintenance. (HRS 1989: 292-294)

The 2012 CLI Field School inventoried stone guardwalls and guardwall/retaining walls (see Figures 21-23). The team classified the general shape and dimension of the stones as either angular/rounded ledge stones or rectilinear quarried blocks. The team also inventoried places where guardwalls were placed on top of retaining walls. Guardwalls with missing or damaged stones were noted.

Guardwalls and guardwall/retaining walls on the carriage road sections associated with the Jordan and Sargent Mountain Carriage Roads are summarized below. Overall, 122 guardwalls were counted on these roads, all of which are constructed with angular/rounded ledge stones. Owing to the hilly to steep terrain, 29 guardwall/retaining walls were built along these roads, by the most of any other group of roads. The guardwalls and guardwall/retaining walls are original structural components of the carriage roads that today appear weathered and rustic. They are contributing features.

[CR 10s-14].
11 guardwalls, all angular/rounded ledge stones, some stones missing.
1 guardwall/retaining wall

[CR 12-10n].
32 guardwalls, all angular/rounded ledge stones, some stones missing.
3 guardwall/retaining walls

[CR 13-12].
4 guardwalls, all angular/rounded ledge stones, some stones damaged.
0 guardwall/retaining walls

[CR 14-15].
5 guardwalls, all angular/rounded ledge stones, some stones missing.
0 guardwall/retaining walls

[CR 15-23].
9 guardwalls, all angular/rounded ledge stones.
5 guardwall/retaining walls, some damaged.

[CR 16-15].
2 guardwalls, all angular/rounded ledge stones.
0 guardwall/retaining walls

[CR 18-19].
2 guardwalls, all angular/rounded ledge stones.
0 guardwall/retaining walls

[CR 19-12].
8 guardwalls, all angular/rounded ledge stones, some stones missing.
0 guardwall/retaining walls

[CR 20-19].
15 guardwalls, all angular/rounded ledge stones.
5 guardwall/retaining walls

[CR 20-22].
11 guardwalls, all angular/rounded ledge stones, some stones slipping.
8 guardwall/retaining walls, some stones slipping.

[CR 21-14].
10 guardwalls, all angular/rounded ledge stones, some stones missing.
4 guardwall/retaining walls

[CR 21-20].
7 guardwalls, all angular/rounded ledge stones.
2 guardwall/retaining walls

[CR 21-22].
6 guardwalls, all angular/rounded ledge stones.
1 guardwall/retaining wall

Ditches, Waterways, and Culverts.
A major reason for the gradual deterioration of the carriage road system was the lack of regular maintenance of its drainage system of ditches, waterways, and culverts. As shrubs and trees became established in ditch lines and culverts silted in, runoff was diverted across the road surfaces with damaging results. Upper drainage systems also became clogged and eventually covered over by leaf duff. (HRS 1989: 280-281)

Because the stone culverts were well built, they were generally in good condition prior to the 1990s, although some headwalls were in poor condition. Unlike the roads and bridges, there were no design drawings for the stone culverts because they were historically designed "on the ground" by the engineer. As a result, Rieley and Brouse suggested carefully studying the structure prior to having a qualified mason undertake the repair work, and ensuring that replacement stones matched the color and character of the existing stones. (HRS 1989: 281-285)

Many of the iron pipes had rusted and failed by the 1990s. Some had been replaced by corrugated metal pipes, which in some cases protruded out of the ground with no flared end section or headwall as originally built. Rieley and Brouse recommended replacing them with reinforced concrete pipes and concealing the ends with inlet basins, headwalls, or flared end sections. (HRS 1989: 285)

The 2012 CLI Field School inventoried stone culverts, waterways, and portions of the upper drainage systems (Figures 24-27). The culvert assembly (the portion of the culvert under the roadway) was classified as follows: stone box culvert, iron pipe, corrugated metal pipe (CMP), reinforced concrete pipe (RCP), or plastic pipe. The treatment of the culvert inlet and culvert outlet was also noted: pipe only, loose stones around pipe, dry laid stone headwall, drop-inlet, or inlet/outlet not found. Sections of stone waterways were noted when clearly visible, although there may be other waterways hidden under the vegetated ditches. The team also noted locations where upper drainage systems intersected with the roadside drainage system, but did not investigate the extent of the upper drainages due to time constraints. The vegetated ditches were not inventoried because they are the predominate type of ditch treatment. In general, the vegetated ditches were observed as supporting mosses, ferns, and other groundcovers, which helps visually blend the road corridor with the surrounding landscape. Along some road sections, this vegetation has spread into the roadways themselves, though not to the extent as

seen on the privately owned carriage roads outside of the park's boundaries. The park also mows some of the vegetated ditches to prevent the establishment of woody plants.

Culverts, waterways, and upper drainage systems on the carriage road sections associated with the Jordan and Sargent Mountain Carriage are summarized below. Overall, 228 culverts were found on these roads, a majority of which are constructed with stone box culverts or reinforced concrete pipes and feature stone drop-inlets and stone headwalls at the outlets. Where warranted by the hilly and steep terrain, stone waterways are present. The culverts and waterways are original structural components of the carriage roads and are therefore contributing features. Four upper drainage systems were observed. The extents of the upper drainage systems are not fully known at this time, and therefore they are evaluated as undetermined.

[CR 10s-14].
35 culverts, mainly stone box culverts, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
1 upper drainage system

[CR 12-10n].
48 culverts, mainly stone box culverts, dry laid stone headwalls at inlets and outlets.
1 waterway
0 upper drainage systems

[CR 13-12].
2 culverts, both RCP, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
0 upper drainage systems

[CR 14-15].
4 culverts, mainly CMPs, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
0 upper drainage systems

[CR 15-23].
15 culverts, mainly CMPs, dry laid stone headwalls at inlets, loose stones around outlets.
0 waterways
1 upper drainage system

[CR 16-15].
1 culvert, RCP, dry laid stone headwall at inlet, loose stones around outlet.
0 waterways
0 upper drainage systems

[CR 18-19].
3 culverts, all RCPs, dry laid stone headwalls at inlets and outlets.
0 waterways
0 upper drainage systems

[CR 19-12].
38 culverts, mainly RCPs, dry laid stone headwalls at inlets and outlets.
2 waterways
0 upper drainage systems

[CR 20-19].
19 culverts, mainly RCPs, dry laid stone headwalls at inlets, loose stones around outlets.
0 waterways
1 upper drainage system

[CR 20-22].
28 culverts, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
0 upper drainage systems

[CR 21-14].
14 culverts, mainly CMPs, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
1 upper drainage system

[CR 21-20].
17 culverts, mainly RCPs, dry laid stone drop-inlets, loose stones around outlets.
0 waterways
0 upper drainage systems

[CR 21-22].
4 culverts, mainly CMPs, dry laid stone drop-inlets, dry laid stone headwalls at outlets.
0 waterways
0 upper drainage systems

Character-defining Features:

Feature: Little Harbor Brook Bridge (BR40S)

Feature Identification Number: 166051

Type of Feature Contribution: Contributing

IDLCS Number: 6574

Feature: Jordan Pond Dam Bridge (Jordan Stream Bridge) (BR22s)

Feature Identification Number: 166053

Type of Feature Contribution: Contributing

IDLCS Number: 6568

Feature: West Branch Jordan Stream Bridge (BR07S)

Feature Identification Number: 166055

Type of Feature Contribution: Contributing

IDLCS Number: 6569

Feature: Deer Brook Bridge (BR09S)

Feature Identification Number: 166057

Type of Feature Contribution: Contributing

IDLCS Number: 6575

Feature: Hemlock Bridge (Maple Spring Bridge) (BR14S)

Feature Identification Number: 166059

Type of Feature Contribution: Contributing

IDLCS Number: 6571

Feature: Waterfall (Upper Hadlock Brook) Bridge (BR15S)

Feature Identification Number: 166061

Type of Feature Contribution: Contributing

IDLCS Number: 6570

Feature: Chasm Brook Bridge (BR24S)

Feature Identification Number: 166063

Type of Feature Contribution: Contributing

IDLCS Number: 6581

Feature: Amphitheatre Bridge (BR16S)

Feature Identification Number: 166065

Type of Feature Contribution: Contributing

IDLCS Number: 6573

Feature: Cliffside Bridge (BR11S)

Feature Identification Number: 166067

Type of Feature Contribution: Contributing

IDLCS Number: 6579

Feature: Jordan Stream Little Bridge #1 (BR42S)

Feature Identification Number: 166069

Type of Feature Contribution: Contributing

IDLCS Number: 41115

Feature: Jordan Stream Little Bridge #2 (BR43S)

Feature Identification Number: 166071

Type of Feature Contribution: Contributing

IDLCS Number: 41116

Feature: Jordan Stream Little Bridge #3 (BR44S)

Feature Identification Number: 166073

Type of Feature Contribution: Contributing

IDLCS Number: 41117

Feature: Carriage Roads – Retaining Walls and Embankments

Feature Identification Number: 166075

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Guardwalls (Coping Stones)

Feature Identification Number: 166077

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Guardwalls/Retaining Walls

Feature Identification Number: 166079

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Box Culverts and Pipe Culverts/Headwalls

Feature Identification Number: 166081

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Ditches and Stone Waterways

Feature Identification Number: 166083

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Upper Drainage Systems

Feature Identification Number: 166085

Type of Feature Contribution: Undetermined

Landscape Characteristic Graphics:

Figure 20. The Little Harbor Brook Bridge on CR 20-22. (Acadia Week 6, 168, SUNY-ESF, 2012)

Figure 21. The Hemlock Bridge (Maple Spring Bridge) on CR 19-12. (Trip 1, ACAD CR 19-12_1.2809, DSC_0248, SUNY-ESF, 2012)

Figure 22. Bridges #1 and #2, two of the three Jordan Stream Little Bridges on CR 15-23. (Trip 1, ACAD CR 15-23_0.1229, DSC_4761, SUNY-ESF, 2012)

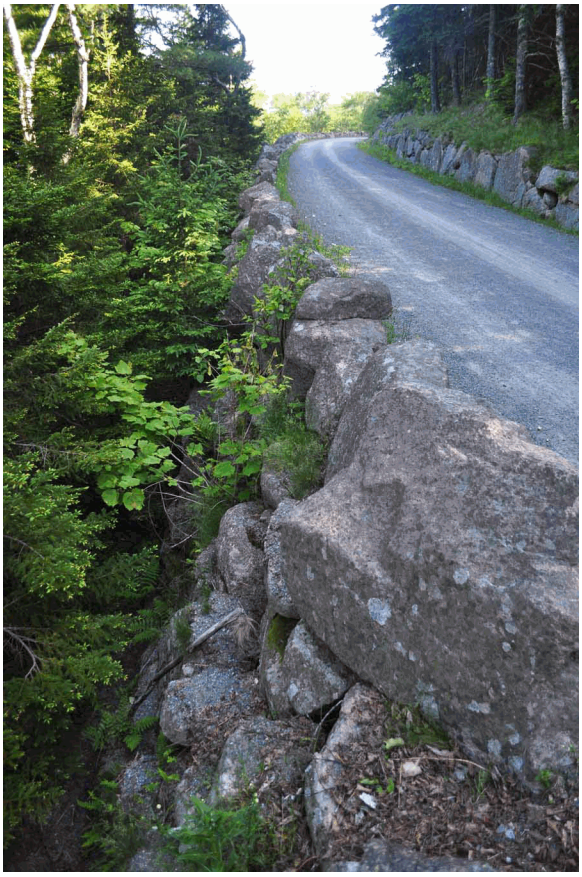


Figure 23. Retaining wall (image right) and guardwall/retaining wall (image left) on CR 10s-14. (Trip 1, ACAD CR 10s-14_0.9756, DSC_4687, SUNY-ESF, 2012)

Figure 24. Stone waterway and culvert inlet on CR 12-10n. (Trip 1, ACAD CR 12-10n_0.4307-in, DSC_5243, SUNY-ESF, 2012)

Figure 25. View of an upper waterway and culvert inlet on CR 19-12, one of the largest waterways in the carriage road system. (Trip 1, ACAD CR 19-12_1.2394, DSC_0246, SUNY-ESF, 2012)

Figure 26. A stone waterway and culvert inlet on CR 21-20. (Trip 1, ACAD CR 21-20_0.5750-end, DSC_0046, SUNY-ESF, 2012)

Figure 27. Detailed view of the waterway shown in Figure 26 on CR 21-20. (Trip 1, ACAD CR 21-20_0.5750-detail, DSC_0047, SUNY-ESF, 2012)

Views and Vistas

Views are the expansive or panoramic prospect of a broad range of vision that may be naturally occurring or deliberately contrived, while vistas are the controlled prospect of a discrete, linear range of vision. Acadia's carriage roads were deliberately designed to provide panoramic views of the island and the surrounding water, as well as more intimate framed vistas of marshes, streams, and bridges. Rockefeller did his best in keeping the views and vistas open during his lifetime, but after his death most became overgrown until the 1990s. Views and vistas present on the Jordan and Sargent Mountain Carriage Roads are described below:

Historic Conditions:
Acadia's carriage roads were designed to take advantage of hundreds of sweeping and dramatic views of the mountains, lakes, bay, and ocean. As Rieley and Brouse discuss, the study of the topography and alignment of the roads gives a clear indication of where views and vistas were planned along the carriage roads. The carriage roads were carefully located to follow the shoulders of the mountains, affording views of the surrounding scenery, but avoiding the crests of the mountains [except Day Mountain] where they would become a part of the views. Rockefeller and engineers Charles and Paul Simpson had a keen understanding of how to align the carriage roads on Mount Desert Island with the topography to take advantage of

scenic views. Some of the planned views and vistas were referenced in correspondences between Rockefeller, the Simpsons, and landscape architect Beatrix Farrand. In fact, Rockefeller, Farrand, and Charles Miller (Rockefeller's nurseryman) would often repeatedly visit newly planted areas in different seasons to adjust or add plants to improve the views. (HRS 1989: 294,309; Roberts 2012: 174)

Ponds, marshes, streams, and waterfalls were frequent subjects of views and vistas, many of which were enhanced and framed by Farrand's new plantings and by trees that were intentionally saved during construction. Rockefeller's practice of clearing vegetation along the roadway provided long views into the forests. There were also views to and from the gatehouses and the bridges; some turnouts along the carriage roads, and turrets on the bridges themselves, were designed to give visitors good views of the bridges. (HRS 1989: 295-297)

Post-historic and Existing Conditions (after 1940):
The 1947 fire that devastated the northern and eastern parts of the island's vegetation consequently opened additional views and vistas from the carriage roads. In the years that followed some views were broadened even more by Rockefeller's work crews, who removed dead and downed trees caused by the fire and continued to implement his preference of removing downed roadside vegetation. Nonetheless, the growth of trees at times outpaced even his crews, as indicated in a letter from 1954:
"…Along the various horse roads, particularly up the Long Pond Valley and over along the southern slopes of Jordan and Sargent, views of the sea and mountains cut some years ago are gradually being obliterated by new growth. These views originally cut are important additions to the enjoyment of the roads which traverse those areas and should be reopened where necessary." (HRS 1989: 310, citing Letter, Rockefeller to DeRevere, 21 October 1954)

After Rockefeller's death, the natural growth of vegetation, combined with successful reforestation efforts implemented after the fire, gradually obscured views and vistas along the carriage roads as well as the motor roads. The maintenance of most vistas ceased, and by the 1980s the carriage roads had essentially become tunnels of vegetation, which decreased their appeal as a destination for park visitors. Landscape architect Charles W. Eliot, II, author sixty years earlier of "The Future of Mount Desert Island" emphasized in 1988 the importance of keeping the vistas open:
"The tree growth—with no forest fires since 1949—is changing the island and Park from Champlain's "Isle de Monts Deserts"—the hills kept bare by the forest fires set by the Indians to foster the berry crops—to the "Island of Wooded Hills." Since we certainly do not want and must prevent and fight any forest fire, we will have to cut the trees blocking those views." (HRS 1989: 297, citing Letter, Eliot to Rieley, 27 November 1988)

In their 1989 report for the carriage road system, Rieley and Brouse mapped 27 vistas based on historic correspondences primarily between Rockefeller and Farrand, but recommended additional studies and development of a comprehensive vista clearing and maintenance program. In 1995, Pressley & Associates completed a "Vista Assessment Report" that

identified approximately 200 existing and potentially significant vista locations based on historical, ecological, and aesthetic criteria, with the goal of selecting 100 of them for rehabilitation. Of these, 100 vistas were recommended and prioritized, as well as another 15 existing vistas that were becoming overgrown and in need of selective vegetation removal. This approach was developed to provide a fairly even distribution of vistas throughout the carriage road system. Most of these vistas are managed and maintained today. (Pressley 1995: 18,21-23,29-33)

The Pressley report justified their methodology by noting that because of the growth of the forests along the carriage roads after initial construction and after the 1947 fire, the aim of vista rehabilitation work would be one of renovation rather than restoration:
"Due the general lack of hard documentation and of unlimited budgets, with the exception of a handful of obvious and well-visited sites, there is no way to accurately identify and recreate the innumerable vistas with the carriage roads' creator recognized, developed, and maintained. With the necessity of respecting now [1995] mature forests, even if it were possible, to return these portions of the park's vegetation to that found fifty or more years ago would require returning to the scarred, immature condition that Mr. Rockefeller made every effort to encourage returning to a natural successional state after the roads were constructed." (Pressley 1995: 20)

The 2012 CLI Field School noted views and vistas observed in the field using the following criteria (Figures 28-29): Panoramic View (at least 200 feet in length, mostly open, horizon line present); Filtered View (any length through trees to a distance, no horizon line); and Framed View. The team's observations are graphically represented in the site plans for this report, and their "best views" for each road section are noted below.

An analysis of the Pressley vistas for each road section was also conducted for this CLI, and shows that many of the team's observed views and vistas correspond to the 100 views and vistas identified in the Pressley report. The numbers of existing vistas needing no work (EX), existing vistas needing selective removals (SR), and recommended vistas (Rec) are listed below for each carriage road segment associated with the Jordan and Sargent Mountain Carriage Roads. Only 11 existing vistas were identified by Pressley, an indication of how few views were available in the early 1990s. Of the 100 recommended vistas across the entire carriage road system, 38 were recommended for the Jordan and Sargent Mountain Carriage Roads, 14 of which were in the top 25 of prioritized vistas, the most of any other part of the carriage road system (Figure 30).

[CR 10s-14]. Pressley: EX 1, SR 1, Rec 6. Best views: Jordan Pond, waterfall, and talus slope.
[CR 12-10n]. Pressley: EX 3, SR 1, Rec 10. Best views: panoramas of north and west sides of the island.
[CR 13-12]. Pressley: EX 0, SR 0, Rec 2. Best view: Upper Hadlock Pond.
[CR 14-15]. Pressley: EX 0, SR 0, Rec 1. Best views: Jordan Pond, The Bubbles, Pemetic

Mountain.
[CR 15-23]. Pressley: EX 0, SR 0, Rec 0. Best view: Jordan Stream.
[CR 16-15]. Pressley: EX 0, SR 0, Rec 0. Best view: none noted.
[CR 18-19]. Pressley: EX 0, SR 0, Rec 0. Best view: forest interior.
[CR 19-12]. Pressley: EX 3, SR 0, Rec 4. Best view: ocean (limited).
[CR 20-19]. Pressley: EX 0, SR 0, Rec 0. Best views: Eastern Way and distant mountains.
[CR 20-22]. Pressley: EX 0, SR 1, Rec 2. Best views: distant mountains and ocean.
[CR 21-14]. Pressley: EX 0, SR 0, Rec 10. Best views: distant mountains and ocean.
[CR 21-20]. Pressley: EX 1, SR 0, Rec 3. Best views: Amphitheatre Bridge and its overlook.
[CR 21-22]. Pressley: EX 0, SR 0, Rec 0. Best views: none noted.

Pressley's recommended vistas, and the vistas that required selective removals, are listed in the table below (Vista #35/3 = "recommended rank number/200 vistas identity number"; SR/2 = "selective removal/200 vistas identity number"). They are contributing features because they represent the original intent of the carriage road vistas.

Character-defining Features:

Feature: CR 10s-14, Vista #96/96

Feature Identification Number: 166087

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista #13/97

Feature Identification Number: 166089

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista #77/98

Feature Identification Number: 166113

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista #37/99

Feature Identification Number: 166115

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista #49/100

Feature Identification Number: 166117

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista #86/101

Feature Identification Number: 166097

Type of Feature Contribution: Contributing

Feature: CR 10s-14, Vista SR/103

Feature Identification Number: 166121

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #70/118

Feature Identification Number: 166123

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #57/119

Feature Identification Number: 166103

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #24/120

Feature Identification Number: 166127

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #31/121

Feature Identification Number: 166129

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista SR/124

Feature Identification Number: 166131

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #94/126

Feature Identification Number: 166133

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #66/127

Feature Identification Number: 166135

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #64/129

Feature Identification Number: 166137

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #16/132

Feature Identification Number: 166139

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #45/133

Feature Identification Number: 166141

Type of Feature Contribution: Contributing

Feature: CR 12-10n, Vista #23/134

Feature Identification Number: 166143

Type of Feature Contribution: Contributing

Feature: CR 13-12, Vista #48/138

Feature Identification Number: 166145

Type of Feature Contribution: Contributing

Feature: CR 13-12, Vista #12/139

Feature Identification Number: 166147

Type of Feature Contribution: Contributing

Feature: CR 14-15, Vista #6/144

Feature Identification Number: 166149

Type of Feature Contribution: Contributing

Feature: CR 19-12, Vista #47/193

Feature Identification Number: 166151

Type of Feature Contribution: Contributing

Feature: CR 19-12, Vista #20/199

Feature Identification Number: 166153

Type of Feature Contribution: Contributing

Feature: CR 19-12, Vista #28/200

Feature Identification Number: 166155

Type of Feature Contribution: Contributing

Feature: CR 19-12, Vista #17/204

Feature Identification Number: 166157

Type of Feature Contribution: Contributing

Feature: CR 20-22, Vista #2/212

Feature Identification Number: 166159

Type of Feature Contribution: Contributing

Feature: CR 20-22, Vista #91/214

Feature Identification Number: 166161

Type of Feature Contribution: Contributing

Feature: CR 20-22, Vista SR/215

Feature Identification Number: 166163

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #4/148

Feature Identification Number: 166165

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #39/149

Feature Identification Number: 166169

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #44/150

Feature Identification Number: 166171

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #83/152

Feature Identification Number: 166173

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #32/154

Feature Identification Number: 166175

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #78/156

Feature Identification Number: 166177

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #84/157

Feature Identification Number: 166179

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #10/158

Feature Identification Number: 166181

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #74/159

Feature Identification Number: 166185

Type of Feature Contribution: Contributing

Feature: CR 21-14, Vista #79/160

Feature Identification Number: 166187

Type of Feature Contribution: Contributing

Feature: CR 21-20, Vista #21/217B

Feature Identification Number: 166189

Type of Feature Contribution: Contributing

Feature: CR 21-20, Vista #22/219

Feature Identification Number: 166191

Type of Feature Contribution: Contributing

Feature: CR 21-20, Vista #14/221B

Feature Identification Number: 166193

Type of Feature Contribution: Contributing

Landscape Characteristic Graphics:

Figure 28. View looking southeast across Jordan Pond, from CR 10s-14. (Trip 2, ACAD CR 10s-14_18_views-vistas, DSCN0819, SUNY-ESF, 2012)

Figure 29. View looking northeast towards Eagle Lake, from CR 12-10n. (Trip 2, ACAD CR 12-10n_13_framedview, P1050228, SUNY-ESF, 2012)

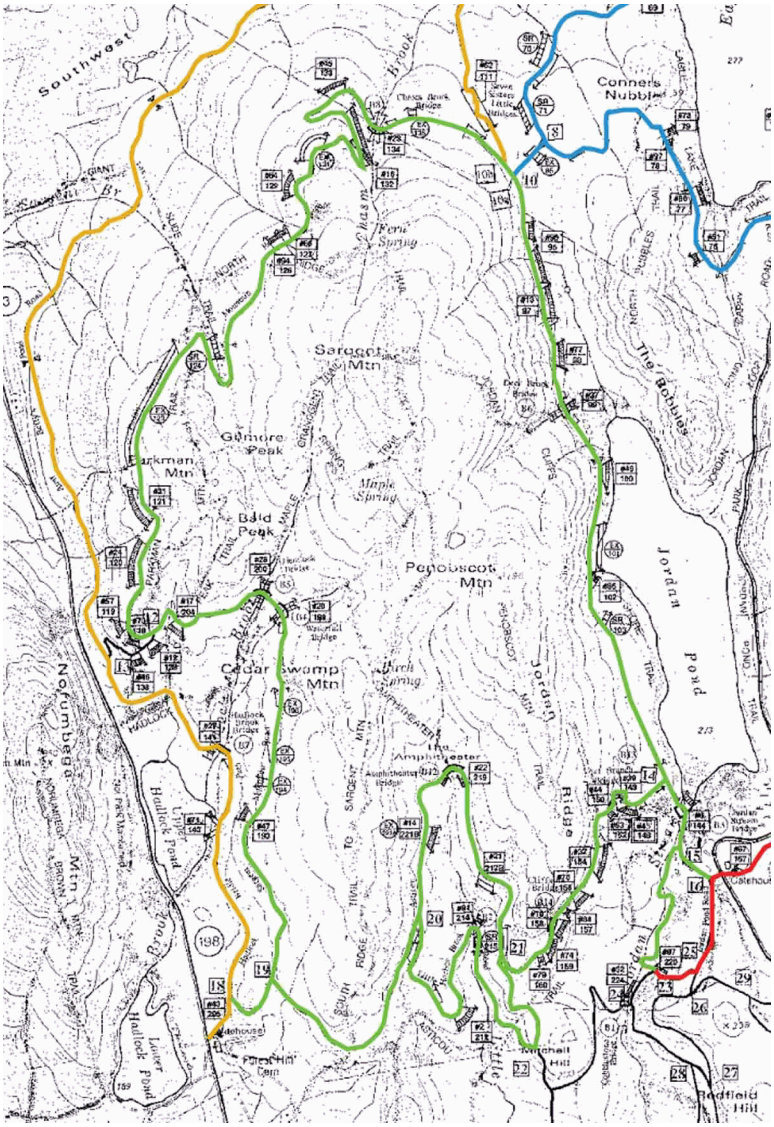


Figure 30. Portion of the 1995 Pressley vista plan showing recommended views and vistas along the Jordan and Sargent Mountain Carriage Roads (in green). (Pressley 1995, annotated by OCLP 2013)

Small Scale Features

Small-scale features are the elements that provide detail and diversity for both functional needs and aesthetic concerns. The most prevalent small-scale feature on Acadia's carriage roads are the rustic wood signposts at each carriage road intersection that provide directional information, destinations, and the intersection number. The 2012 CLI Field School encountered other small-scale features, including a historic gate, as well as other features added by the park since the historic period: information/directional/regulatory signs, interpretive wayside signs, kiosks, benches, gates, and fences. Small-scale features present on the Jordan and Sargent Mountain Carriage Roads are described below.

Historic Condition:
Intersection Signposts.
When construction of the carriage road system was completed in 1940, there were almost 40 locations where carriage road segments intersected. A few years prior to that, Rockefeller decided that a system of directional signs at each intersection would help the public navigate the various carriage roads. Rockefeller approved a signpost design by the park's resident landscape architect, Benjamin Breeze, which consisted of a cedar post from which wooden signboards marked with the points of interest or likely destinations for carriage road users were suspended. The arms from which the signs were hung indicated the direction of travel. Breeze's drawing also specified the type of stain, varnish, and the color of the letters. In October 1936, Rockefeller informed Breeze that if the park's appropriation was insufficient to construct all the signs, he would make up the difference. (HAER ME-13: 88-89; HRS 1989: 240)

Breeze felt that the number of signboards on each signpost should be limited, as the initial plans to include as many as twelve on each arm would make for an overloaded appearance. Also, the original plan to attach the signboards to the arms with eye screws and chains had proven impracticable, as the weight of the signs pulled the eye screws out. Instead, the signboards would be attached to iron straps suspended from the arms. (HAER ME-13: 88-89)

The directional signs were located at each intersection, either within the triangular-shaped island formed by the converging roads or at the sides of the road. In December 1936, Paul Simpson wrote Rockefeller to recommend placing the signs at the sides of the road where the triangles were very small. At larger triangles, however, he thought the signs would be better placed at the points of the triangle. Where a road left off at a right angle, Breeze had recommended using additional posts, rather than a single post as had been planned, to limit the number of signboards arranged vertically. Simpson found the design "very attractive" and said they would "add a feature to the driving roads that is much needed and one that will be much appreciated, I am sure." Once approval was received from Thomas Vint, Civilian Conservation Corps enrollees assigned to Acadia National Park began constructing the signs under the supervision of Breeze. (HAER ME-13: 89, citing Letter, Simpson to Rockefeller, 1 December 1936)

During his visit to the island for the summer of 1937, Rockefeller inspected the new signs and wrote Breeze that he was "greatly pleased," calling the signs "good looking, appropriate, durable and most helpful." His only regret was that distances had not been included. Some signs pointed to the same place in two directions, and the stranger would not know which was the longer route. He conceded that adding the distances would not have been easy, but suggested they be included as more signs were made. Breeze was also working on designs for signs to be placed the entrances to the carriage roads from the motor roads, modeling them after an existing sign at the Jordan Pond Gatehouse, but it was never installed. (HAER ME-13: 89-90, citing Letter, Rockefeller to Breeze, 15 September 1937)

Post-historic and Existing Conditions:
Intersection Signposts.
The park has replaced-in-kind all of the original wood signposts with new ones based on Benjamin Breeze's historic design from the 1930s (Figure 31). Intersections with triangular-shaped island feature three signposts at each point of the triangle, while T-shaped intersections feature one or two signposts along the side of the road. The signposts are constructed with round wood posts that hold pointed round wood arms supported by heavy chain. Hanging from each arm on long metal brackets are individual wood signs with yellow painted letters. The number of individual signs varies depending on the intersection. In the mid-1980s, the carriage road intersections were numbered to help visitors navigate the carriage road system. The small, six-inch square wood signs feature yellow painted numbers and are located at eye-level in carved recesses on the signpost poles. The signposts and signs are in good condition, and are regularly maintained and replaced as needed.

Information/Directional/Regulatory Signs.
These signs are intended to inform and guide visitors who use Acadia's carriage roads. Many are located on carriage road segments that are popular entry points, especially the two gatehouses and the Hulls Cove Visitor Center. None of the signs are historic features. Signs on the carriage road sections associated with the Jordan and Sargent Mountain Carriage Roads are as follows:

Four "Notice: This is Private Property…" signs inform visitors of locations where carriage roads continue onto private property (and bicycling is not allowed). The brown painted signs with white lettering are attached to square posts. They are located at Intersections 22, 23, 25, 30.

Fences.
Split rail fencing, comprised of two rails supported by round wood posts approximately 3-4 feet high, can be found in a few locations. Each fence section is between 8-10 feet in length. The fences are non-contributing features.

Fencing runs from the east end of the Jordan Stream Dam Bridge on CR 14-15 and continues along the gravel path that leads visitors to the Jordan Pond House. It provides safe passage along the water's edge and is in good condition.

Trail Signs and Steps.
Numerous trailhead signs and stone steps associated with Acadia's hiking trail system can be found along the carriage road system. Trailhead signs indicate trail names, destinations and distances where named hiking trails intersect the carriage roads. The signs feature routed letters on the face of a 4-inch round by 8-foot long post that is angled below the letters so that visitors can tie their shoes. Another type of trail sign conveys similar information but consists of individual flat signs bolted to a round or square post. Ten sets of stone steps were counted

along the carriage road system, mostly perpendicular to the road to allow visitors to easily climb the road embankments. As the signs and steps are associated with the hiking trail system, they are not evaluated for this CLI.

Character-defining Features:

Feature: Carriage Roads – Intersection Signposts

Feature Identification Number: 166195

Type of Feature Contribution: Contributing

Feature: Carriage Roads – Informational/Directional/Regulatory Signs

Feature Identification Number: 166197

Type of Feature Contribution: Non Contributing

Feature: Carriage Roads – Fences

Feature Identification Number: 166199

Type of Feature Contribution: Non Contributing

Landscape Characteristic Graphics:

Figure 31. Typical intersection signpost, at Node 15. (Trip 1, ACAD CR 16-15_0.1597, P6200676, SUNY-ESF, 2012)

Condition

Condition Assessment and Impacts

Condition Assessment: Good

Assessment Date: 07/31/2013

Condition Assessment Explanatory Narrative:

The overall condition of the historic carriage road system located within Acadia National Park at the time of this report's completion is evaluated as "good." There is no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition. The carriage roads and associated features have been rehabilitated in the last 15-20 years. Periodic inspections are made on the roadways, engineering features, vistas, and roadside vegetation, and annual work plans address repairs to road surfaces, walls, coping stones, culverts, and waterways as needed.

Impacts

Type of Impact: Erosion

Other Impact: n/a

External or Internal: Internal

Impact Description: Erosion of the gravel road surfaces and soil erosion from adjacent hillsides is an ongoing threat. If left unchecked, it contributes to deterioration or failure of the roadbed, shoulders, ditches, waterways, and culverts.

Type of Impact: Vegetation/Invasive Plants

Other Impact: n/a

External or Internal: Internal

Impact Description: The scenic views from the historic carriage road were the motivation for constructing them. Ongoing maintenance of the views identified in the Pressley report should continue.

Type of Impact: Adjacent Lands

Other Impact: n/a

External or Internal: External

Impact Description: Lands on Mount Desert Island, surrounding islands, and the

mainland are visible from many places along the historic carriage road system. Future clearing or development in these areas could potentially impact the scenic views from the carriage roads.

Treatment

Treatment

Approved Treatment: Rehabilitation

Approved Treatment Document: General Management Plan

Document Date: 01/01/1992

Approved Treatment Document Explanatory Narrative:
The treatment of the historic carriage road system located within the park boundaries was articulated and institutionalized in the 1991/1992 General Management Plan:
"A major carriage road rehabilitation will be undertaken, followed by a comprehensive maintenance program. The rehabilitation effort will be directed by cultural landscape studies that build on earlier studies by Rieley and Associates ["Historic Resource Study for the Carriage Road System]. The program will include investigation of road construction techniques, analysis of road surfaces and bridge integrity, management of vistas, and development of rehabilitation specifications. Maintenance guidelines will be formulated to direct the long term preservation of the carriage road system." (Memorandum, Superintendent to Regional Director, 4 April 1994: 3; GMP 1992: 33,58)

In 1993, an "Environmental Assessment for Rehabilitation and Continuing Maintenance of Carriage Roads in Acadia National Park, Maine" outlined four alternatives to address the safety and resource preservation goals for the carriage roads: no action, routine maintenance, and two rehabilitation strategies (see the "Chronology and Physical History" chapter for a more detailed discussion). "Alternative C," one of the rehabilitation strategies, was selected because it was determined that it best met the management objectives of protecting public safety and rehabilitating the historic carriage roads according to historic preservation standards, while minimizing environmental and economic costs. (Memorandum, Superintendent to Regional Director, 4 April 1994: 4)

The two volume 1989 "Historic Resource Study for the Carriage Road System," by Rieley and Associates, and their 1993 "Cultural Landscape Report for the Carriage Road System" guided the rehabilitation and preservation maintenance on the carriage roads system, which was completed in 1994-1996. Subsequent rehabilitation was completed on the masonry and wood bridges, and on over 100 views and vistas.

Approved Treatment Completed: Yes

Approved Treatment Costs

Cost Date: 01/01/1992

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